

SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver ground and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by SAMS Technical Publishing, LLC as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to SAMS Technical Publishing, LLC by the manufacturers of the specific type of replacement part listed.

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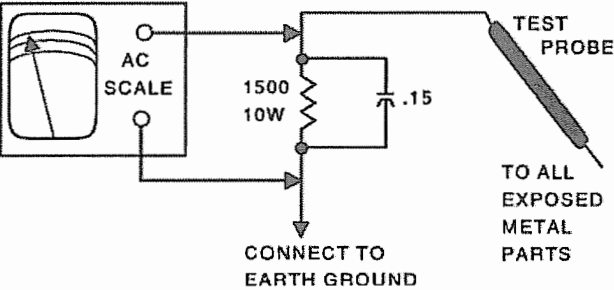
SAFETY CHECKS — FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



PHOTOFACT[®] Technical Service Data
HD

SET 5131

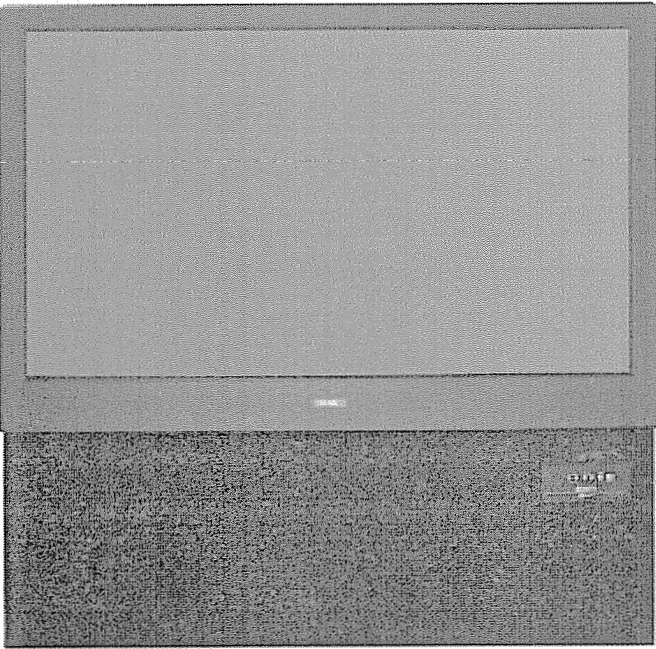
MODEL 55PP9502/84 (CHASSIS DTV315)

PHILIPS

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PHILIPS
Model 55PP9502/84 (Chassis DTV315)

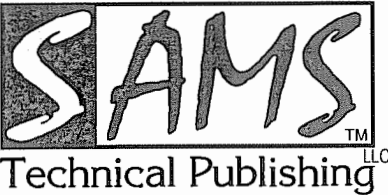


Representative Model
Essential coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

Coverage includes these additional models and chassis:

Models	Chassis
55PP9502/17	DTV315
55PP9502/99	DTV315
55PP950201	DTV315
60PP9502/17	DTV315
60PP9502/99	DTV315
60PP950201	DTV315



APRIL 2006 SET 5131

For a Complete List of Manuals,
Visit www.samswebsite.com



06HD04034

5131

SCHEMATIC COMPONENT LOCATION GUIDE

AC01	A73	C2014	C126	C2033	D163	C2068	C122	C2208	B72	C2291	D77	C2336	C96	C2415	C111	C2555	B107	C2700	B38	C2786	E91	C2839	B50	C2933	C37	D6308	C143	FB5006	C138	GREEN	E152	IC7709	C3	L5261	D98
BLUE	C152	C2014	D165	C2034	B90	C2068	E163	C2208	C72	C2292	D74	C2336	D176	C2416	C111	C2562	C106	C2701	B114	C2788	E90	C2840	A50	C2944	B91	D6309	B82	FB5006	E183	HV5904	A56	IC7714	A6	L5301	E24
BLUE	C152	C2015	B158	C2034	B96	C2069	B165	C2208	D75	C2293	E75	C2338	A172	C2416	D28	C2563	C106	C2701	D85	C2790	D6	C2841	B178	C2945	C92	D6309	C143	FB5007	D158	HV5904	E87	IC7715	D6	L5307	C82
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SCHEMATIC COMPONENT LOCATION GUIDE continued

Q7026	A138	Q7711	B39	R3008	D61	R3027	A138	R3058	C148	R3103	A98	R3203	E144	R3227	C67	R3314	D35	R3357	E82	R3423	A174	R3504	E173	R3636	B109	R3719	D115	R3810	D182	R3844	C23	R3920	D53	ZD6003	E124
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Q7200	C66	Q7801	C44	R3009	E121	R3028	A139	R3059	C162	R3106	A121	R3205	D144	R3232	C142	R3316	B171	R3362	A83	R3427	C33	R3508	D173	R3639	E36	R3722	C39	R3812	A180	R3847	A50	R3924	E47	ZD6009	B57
Q7200	D66	Q7802	D17	R3010	A166	R3028	A157	R3059	E62	R3107	D17	R3205	E75	R3233	C142	R3316	B75	R3363	A84	R3428	C29	R3509	D174	R3642	B108	R3723	A117	R3812	B41	R3847	C23	R3925	E46	ZD6009	E121
Q7202	A67	Q7802	D45	R3010	A75	R3028	B165	R3060	B148	R3108	A17	R3206	A69	R3234	E139	R3316	C146	R3364	C176	R3429	C33	R3510	A30	R3643	A109	R3723	C39	R3812	D17	R3848	B50	R3926	C43	ZD6010	D112
Q7202	C67	Q7803	D18	R3010	B157	R3028	B62	R3060	C162	R3109	B10	R3206	C69	R3235	D143	R3316	D57	R3365	C177	R3430	E27	R3510	D174	R3643	D37	R3724	A117	R3812	E33	R3848	D23	R3927	C42	ZD6011	B57
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TELEVISION SCHEMATIC

PART OF SSM BOARD

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SCHEMATIC NOTES

For SAFETY use only equivalent replacement part, see parts list.

--- Circuitry not used in some versions.

--- Circuitry used in some versions.

⏏ Ground

⏏ Chassis ground

⏏ Common tie point

⏏ Taken from common tie point

⏏ Schematic **CircuitTrace** Voltage source tie point.

A Cabling: Heavy lines reduce use of multiple lines.

Waveforms and voltages are taken from ground, unless otherwise noted.

Waveforms taken with triggered scope and colorbar signal.

Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.

Supply voltages maintained as seen at input.

Voltages measured with digital meter and a 1000μV RF signal, with colorbar pattern applied to antenna terminal.

Controls adjusted for normal operation.

Capacitors are 50 volts or less, 5% or greater unless noted.

Capacitor values are in microfarads unless noted.

Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.

Resistors are less than 1W, 5% or greater unless noted.

Value in () used in some versions.

Measurements with switching as shown unless noted.

Rotated voltage shown on zener diodes.

SCHEMATIC NOTES

Waveforms and voltages are taken from ground, unless otherwise noted.

Waveforms taken with triggered scope and colorbar signal.

Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.

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Resistors are less than 1W, 5% or greater unless noted.

Value in () used in some versions.

Measurements with switching as shown unless noted.

Rotated voltage shown on zener diodes.

SCHEMATIC NOTES

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WITH **CIRCUITRACE®**

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For SAFETY use only equivalent replacement port, see ports list.

→ Circuitry not used in some versions.

--- Circuitry used in some versions.

⬇ Ground

Chassis ground

Common tie point

△ Taken from common tie point

 Schematic Voltage source tie point.

A — Cabling: Heavy lines reduce use of multiple lines

Waveforms from voltages are taken from ground, unless otherwise noted.

Waveforms taken with triggered scope and colorbar signal.

Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.

Supply voltages maintained as seen at input.

Voltages measured with digital meter and a 1000 μ V RF signal, with colorbar pattern applied to antenna terminal.

Controls adjusted for normal operation.

Capacitors are 50 volts or less, 5% or greater unless noted.

Capacitor values are in microfarads unless noted.

Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.

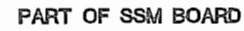
Resistors are less than 1W, 5% or greater unless noted.

Value in () used in some versions.


Measurements with switching as shown unless noted.


Rated voltage shown on zener diodes.

C

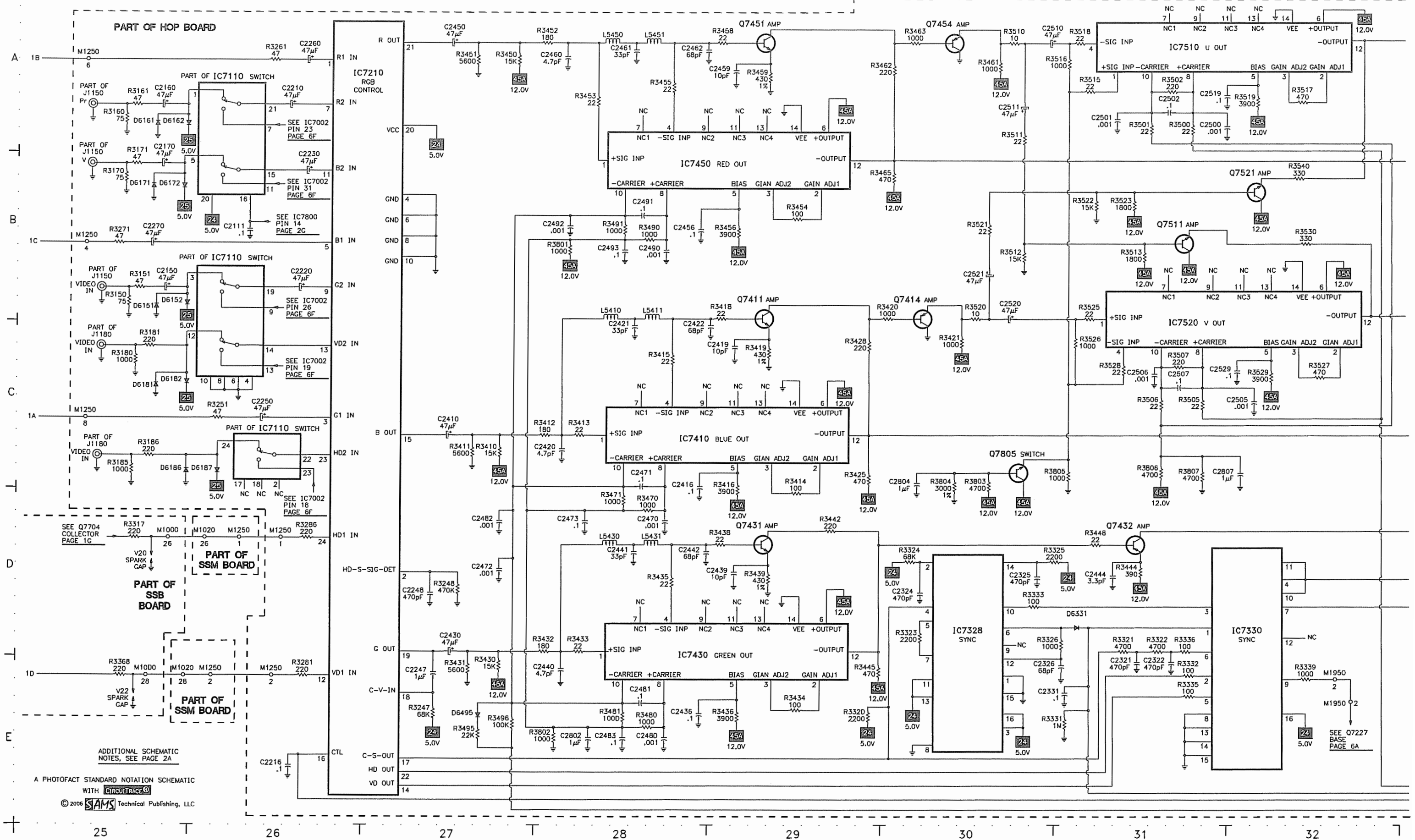


ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A

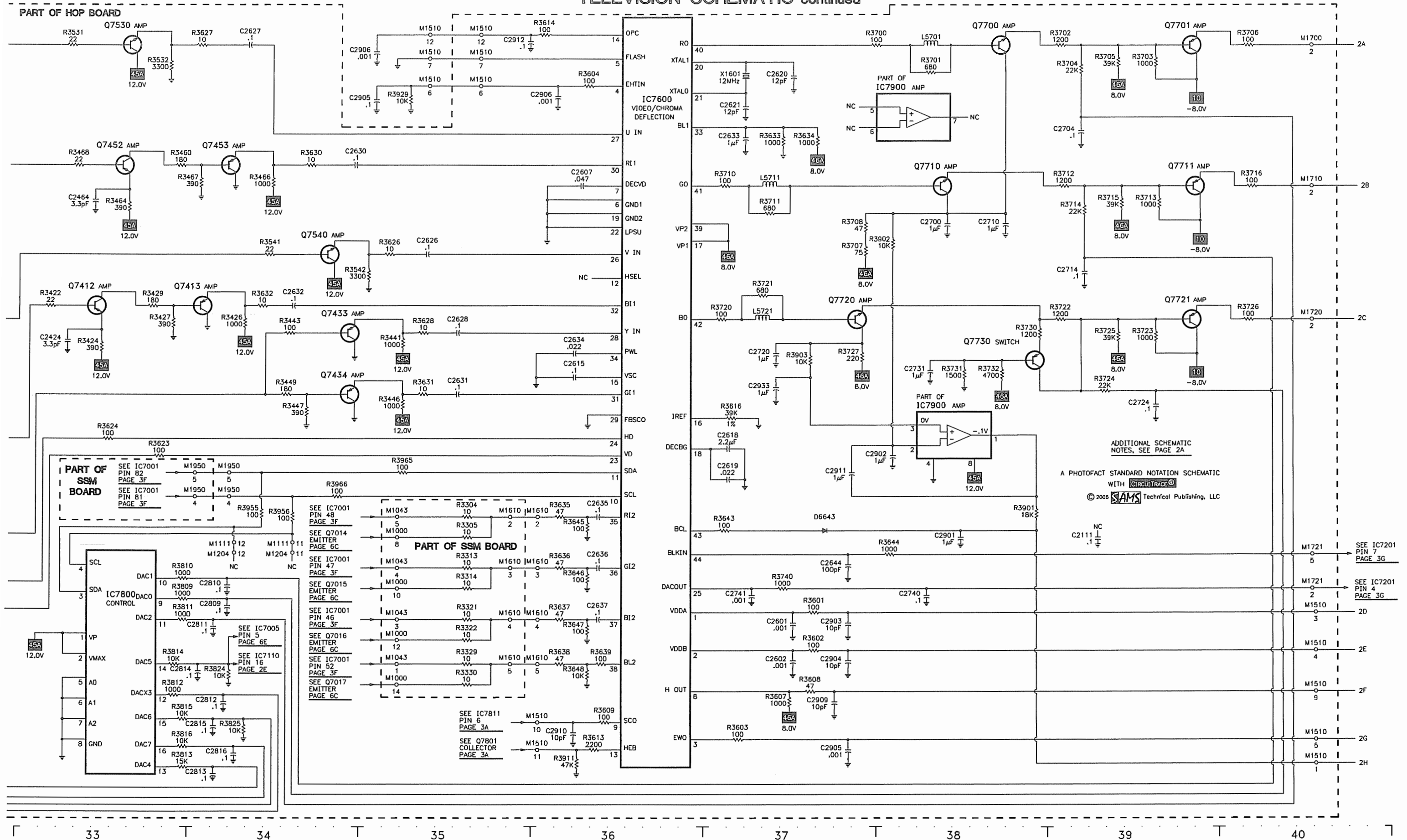
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TELEVISION SCHEMATIC continued



TELEVISION SCHEMATIC continued



DEFLECTION SCHEMATIC

2A

2B

B

2C

C

2E

2D

2F

2G

2H

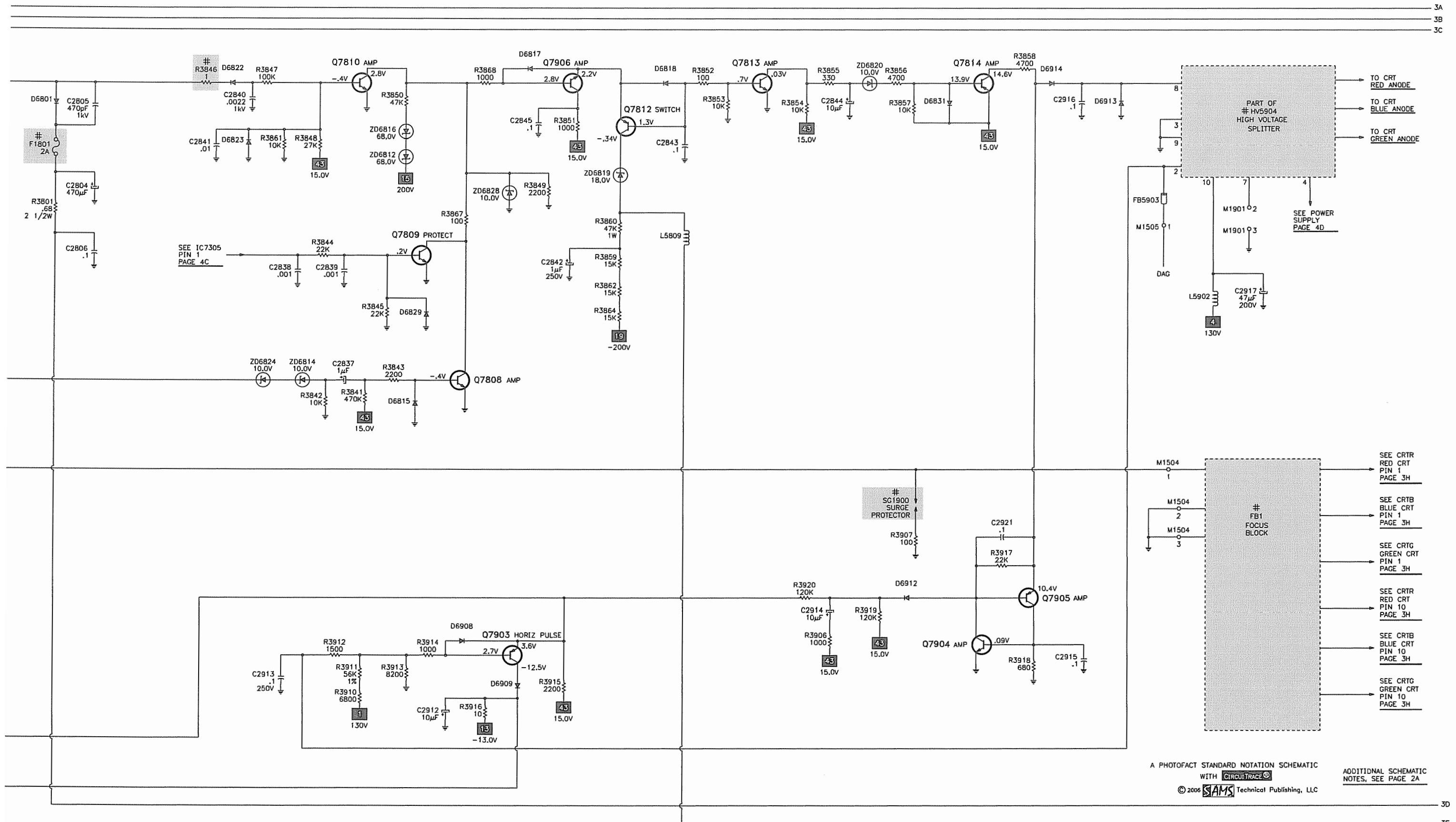
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ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A

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ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A



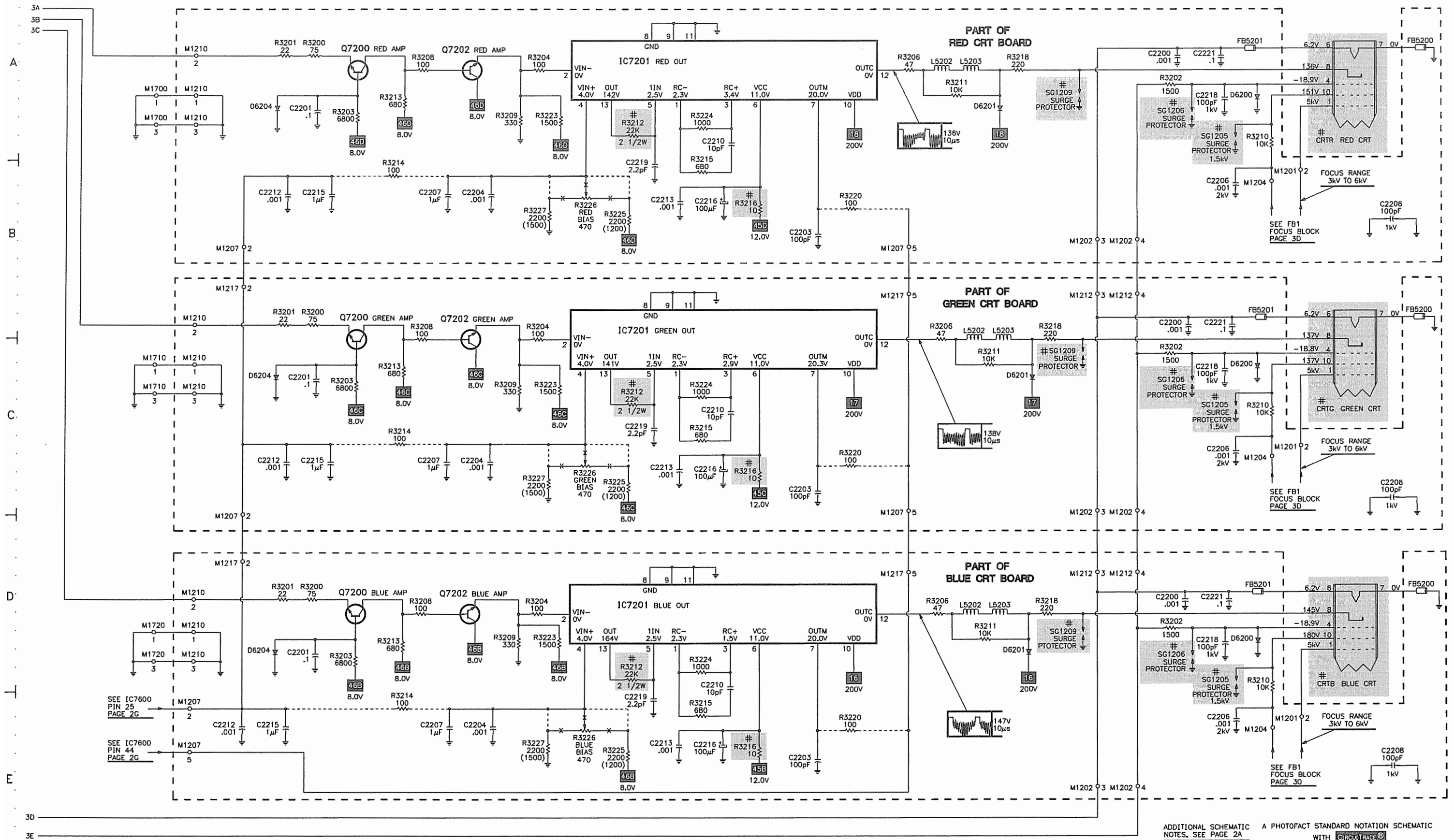
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ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A

F



CRT SCHEMATIC

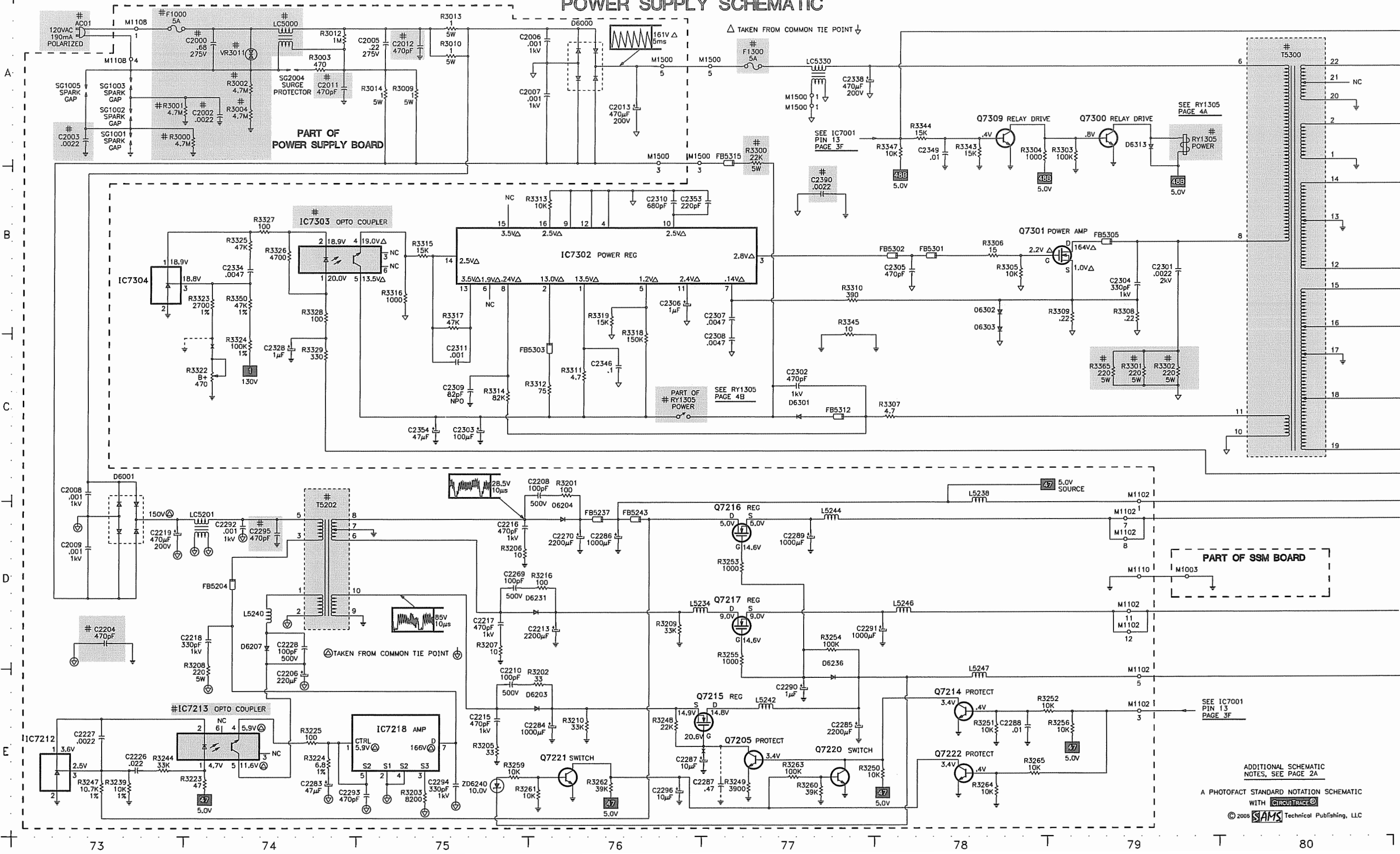


PHILIPS
MODEL 55PP9502/84 (CHASSIS DTV315)

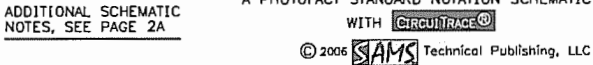
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2A
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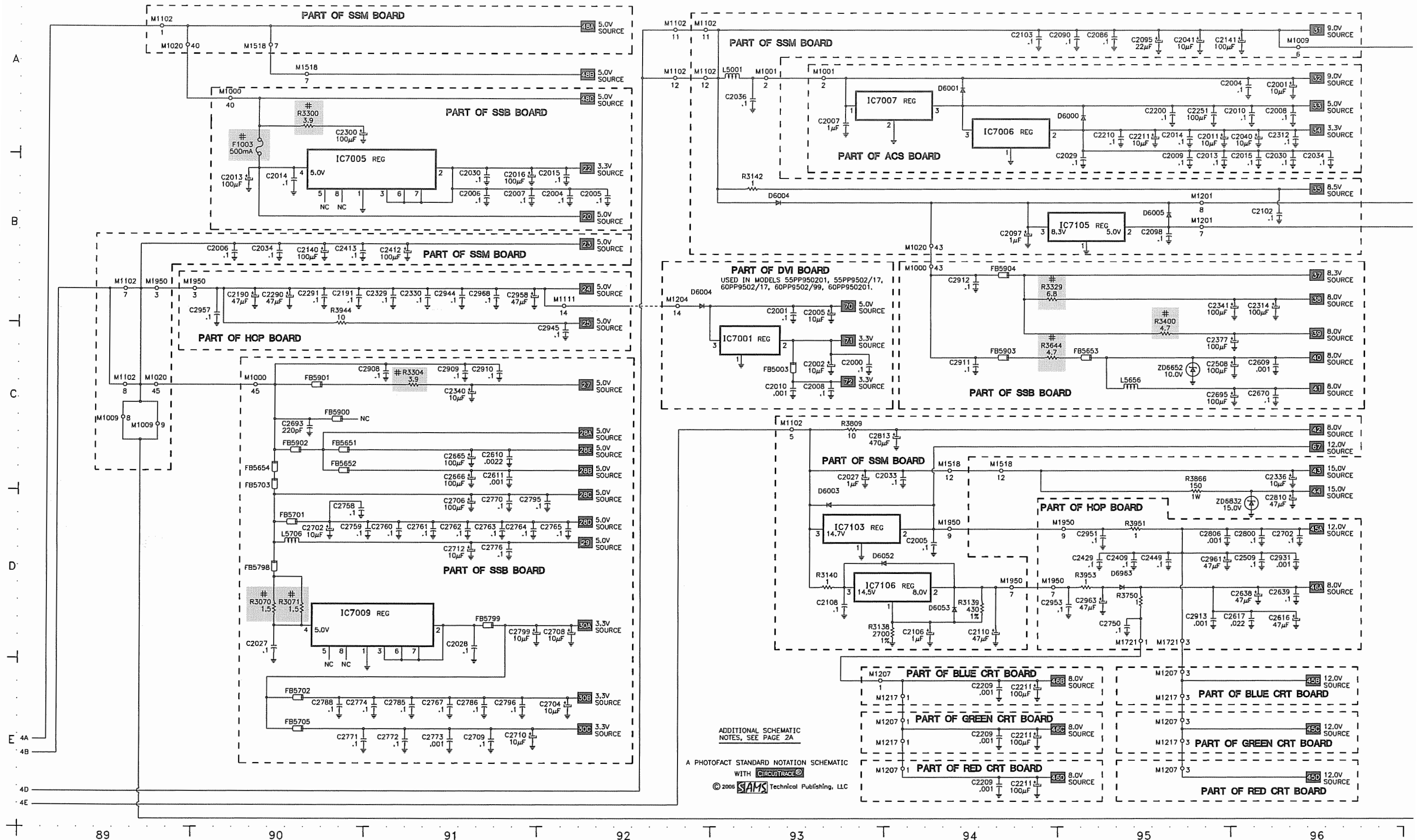
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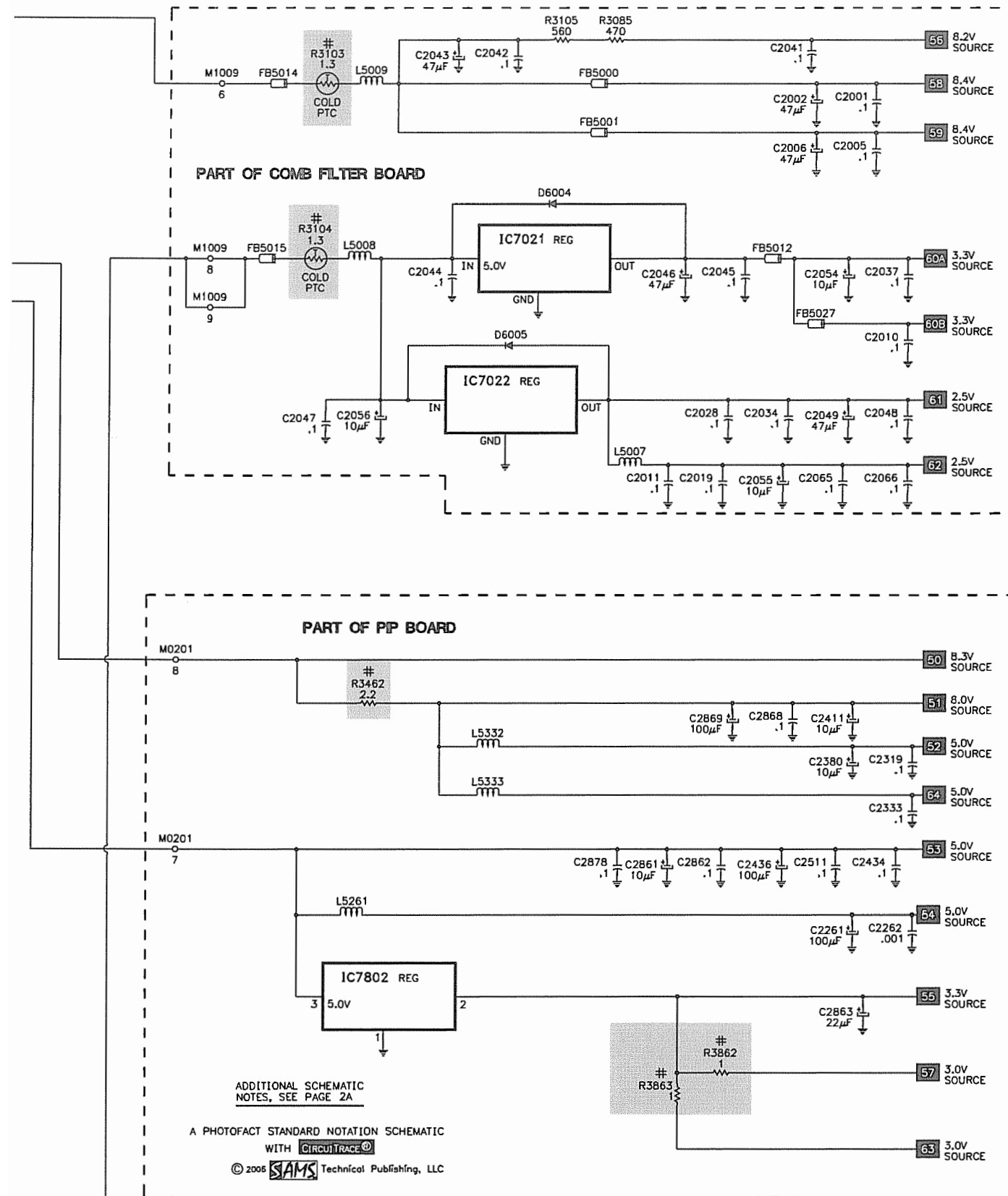
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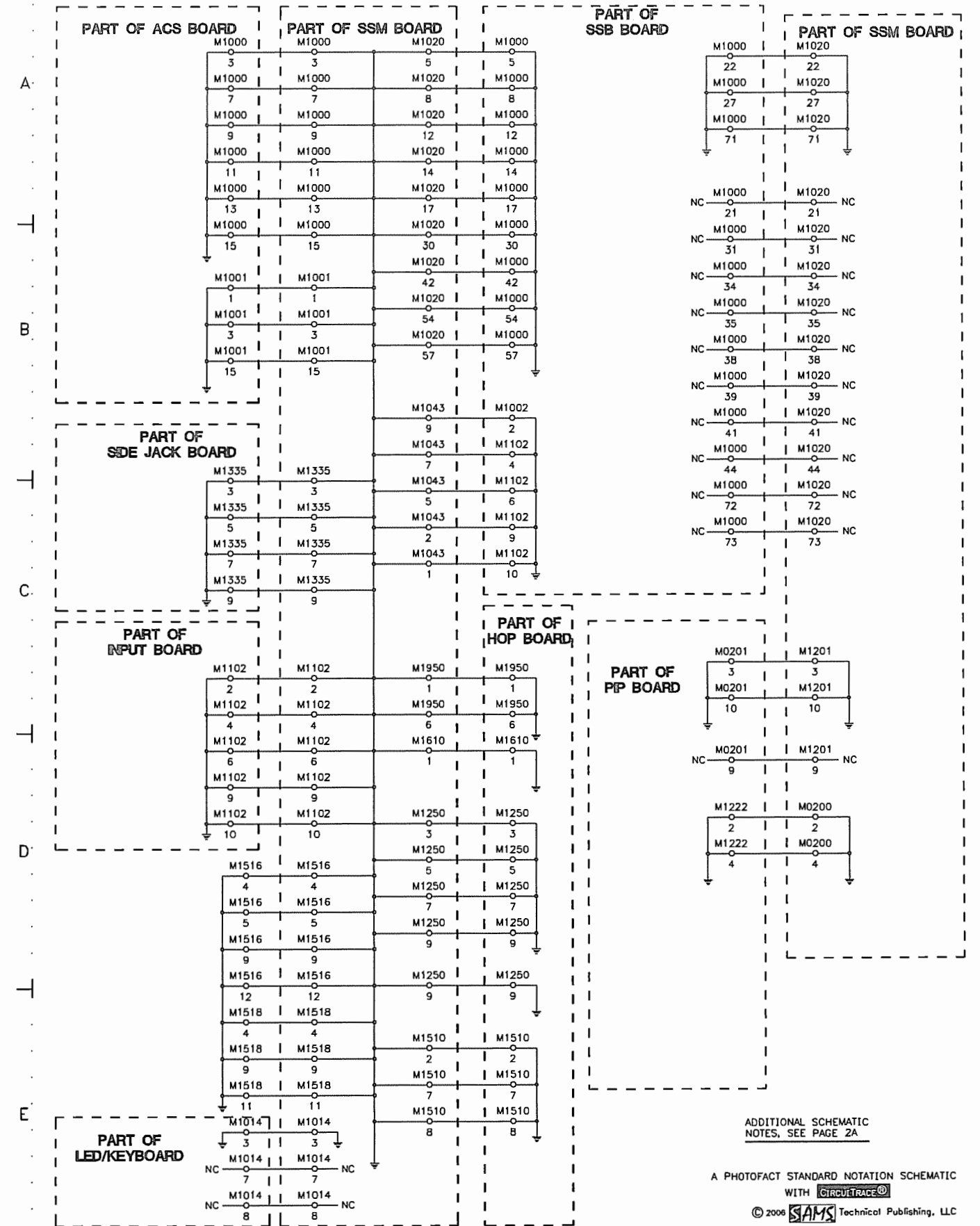
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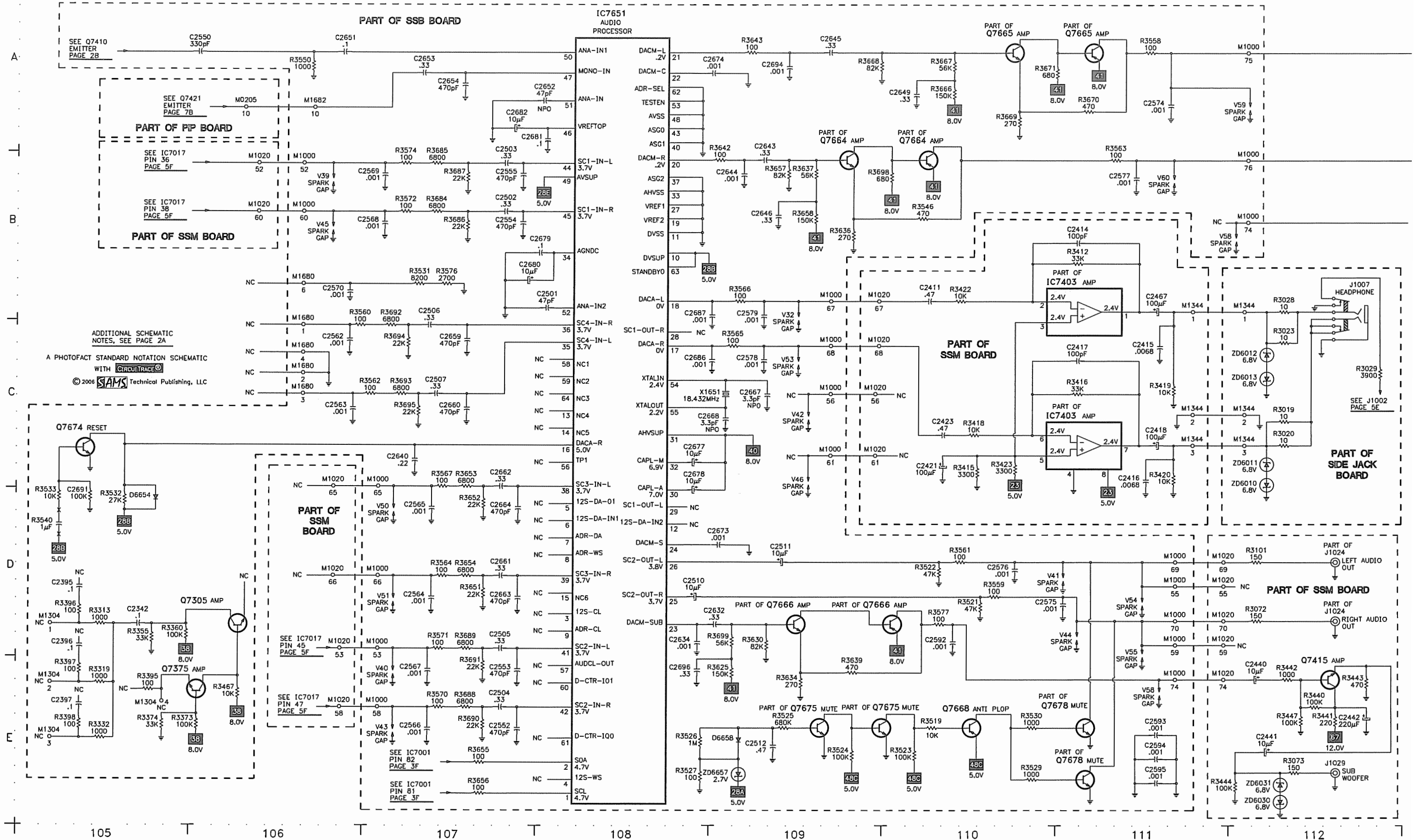
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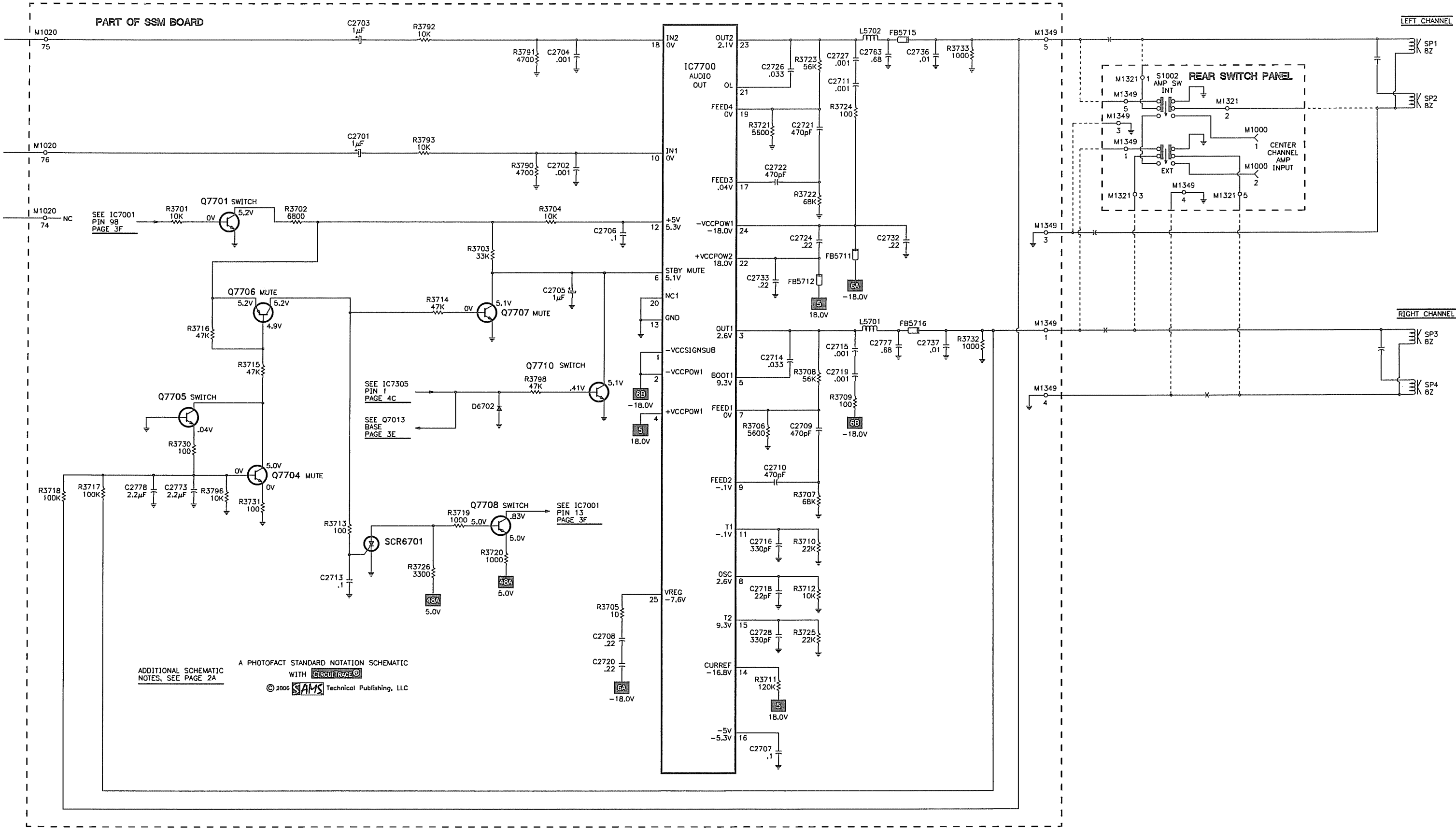
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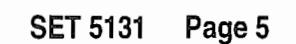
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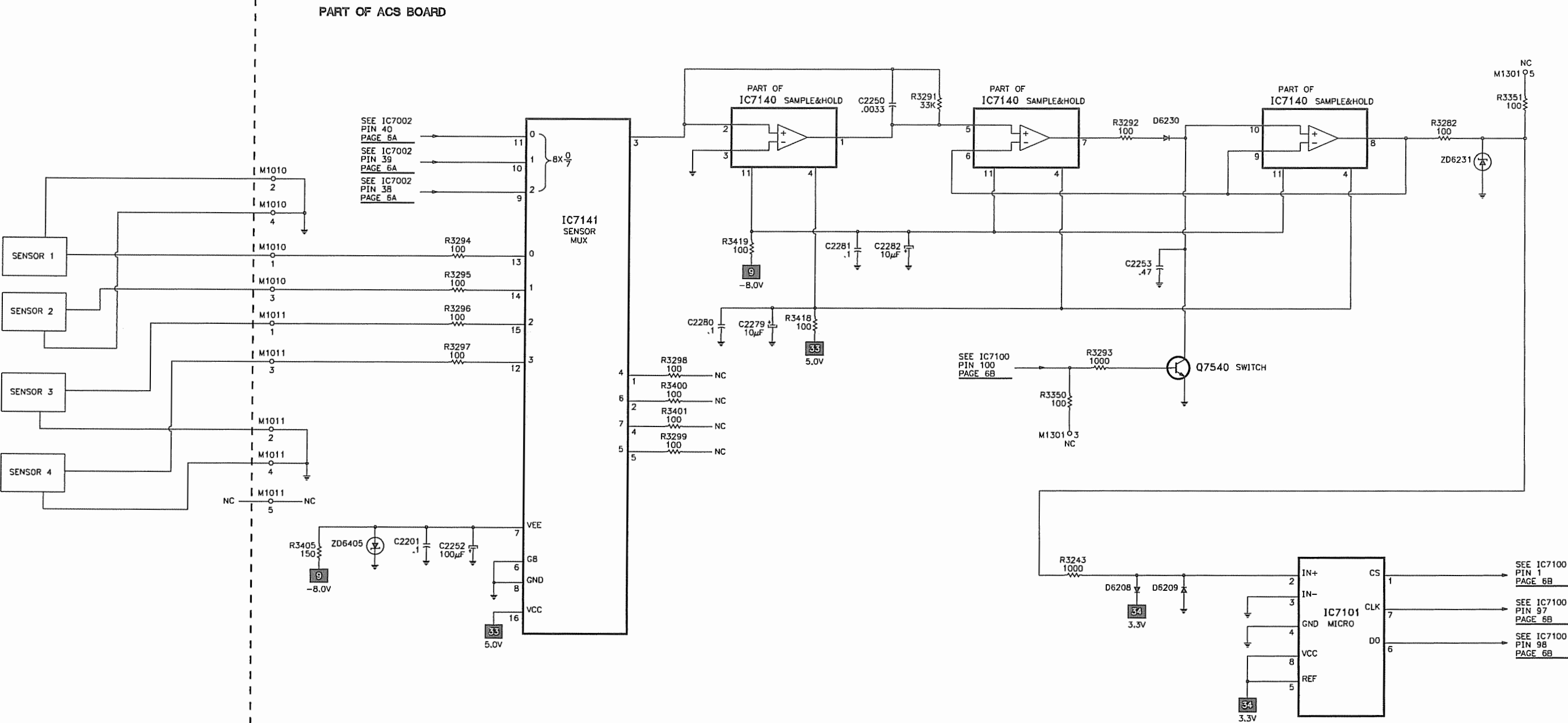
AUDIO SCHEMATIC continued



1



CONVERGENCE SCHEMATIC



PHILIPS
MODEL 55PP9502/84 (CHASSIS DTV315)

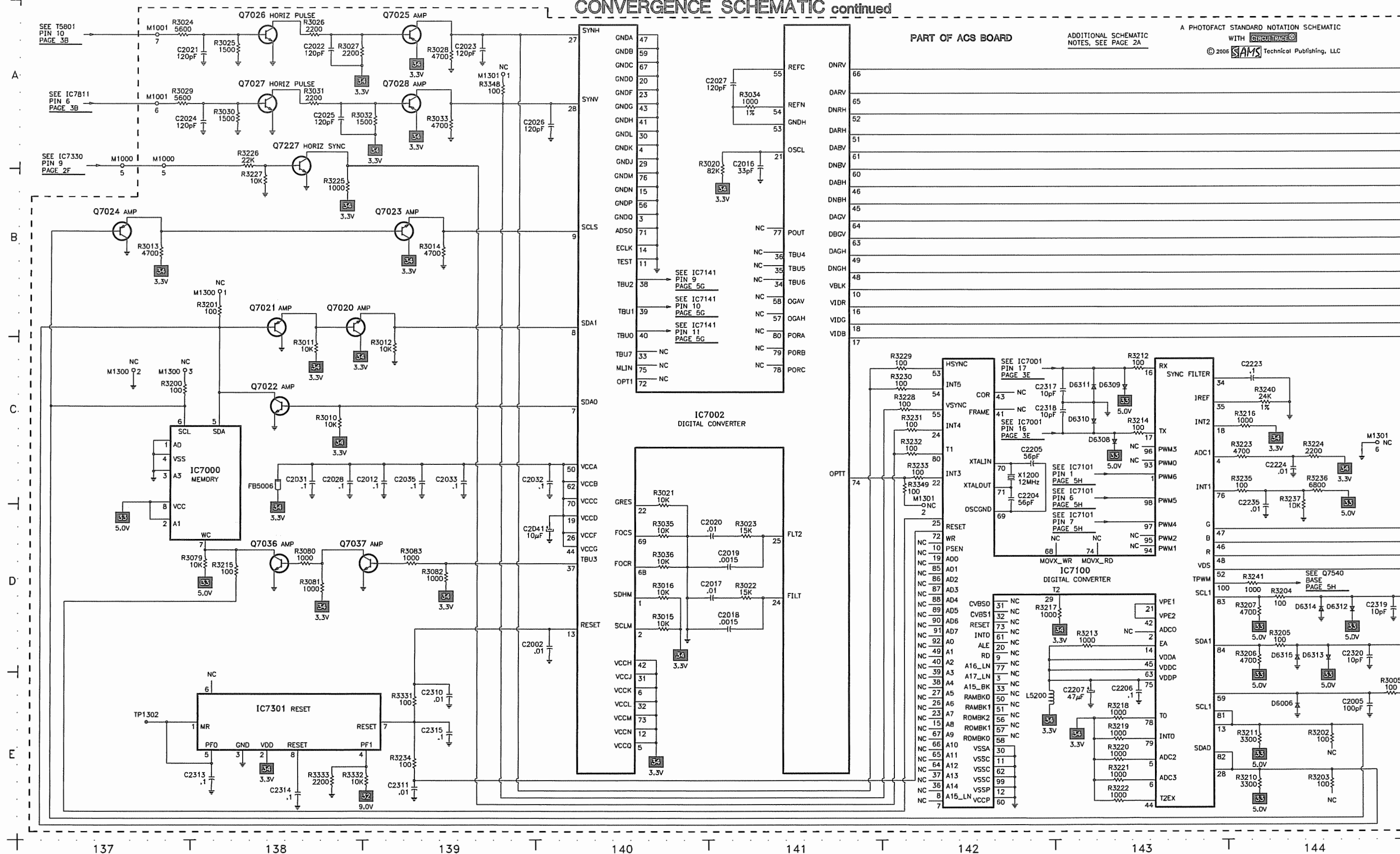
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A

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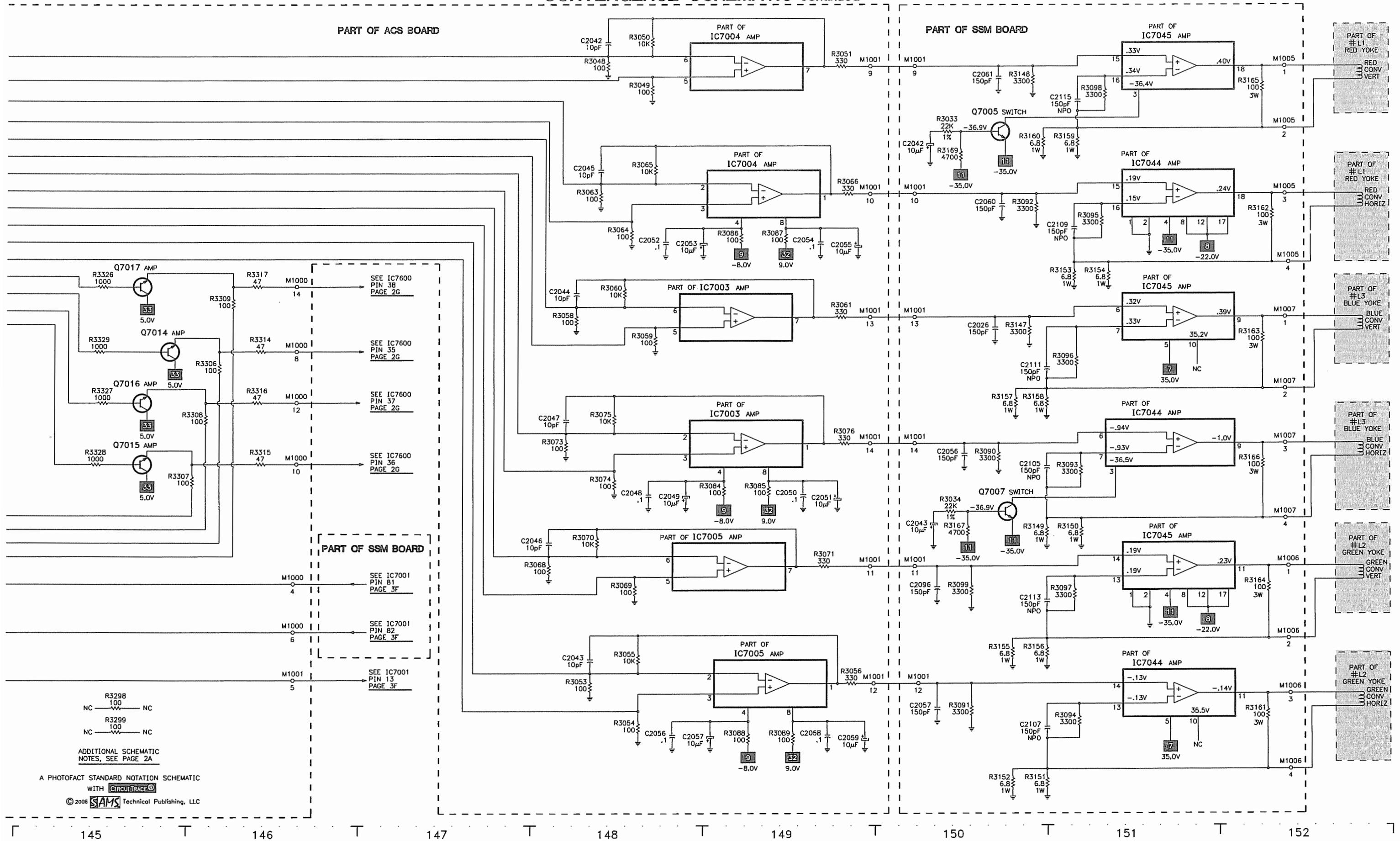
PART OF ACS BOARD

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 2A

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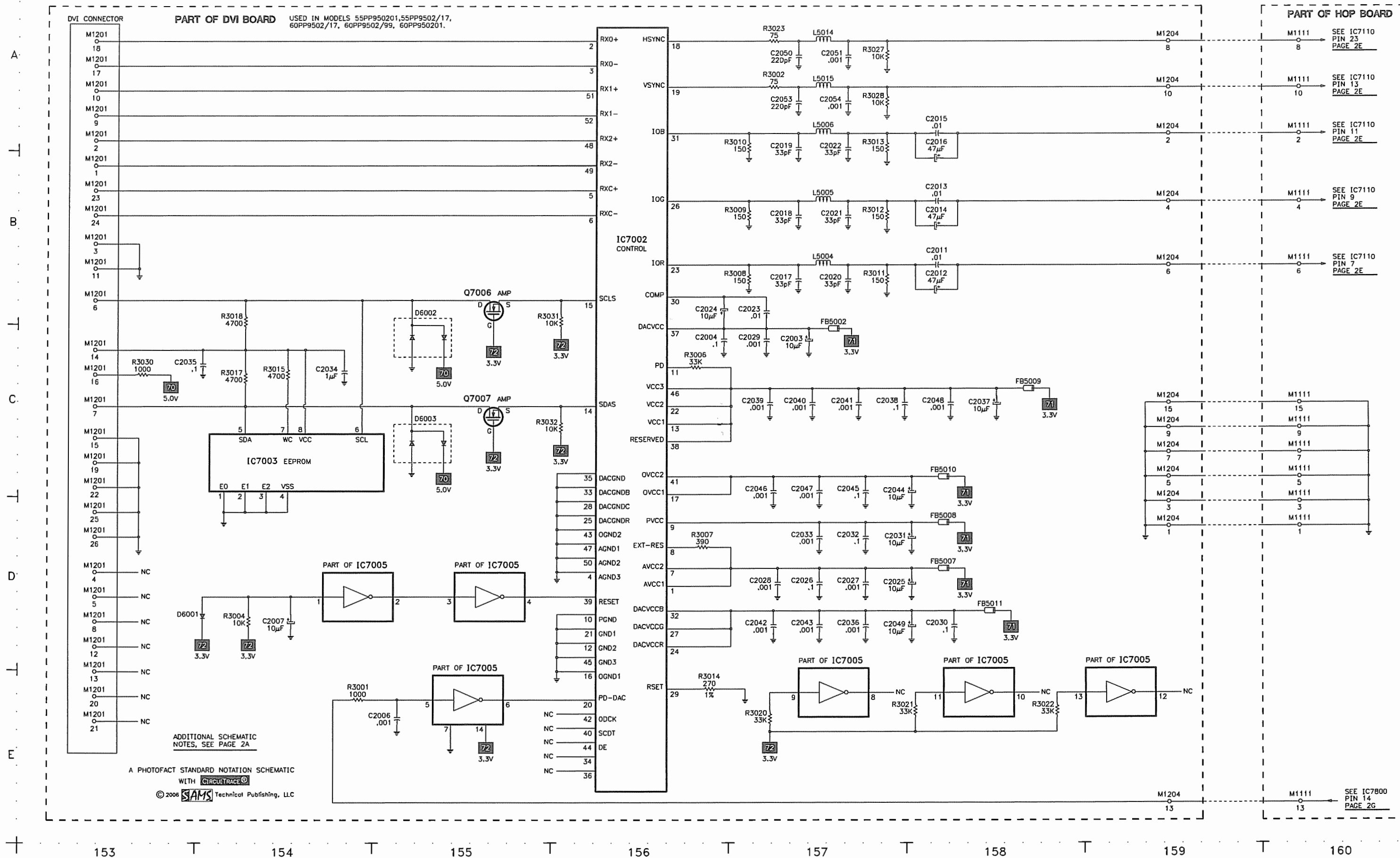
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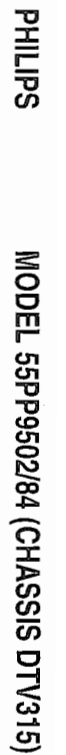


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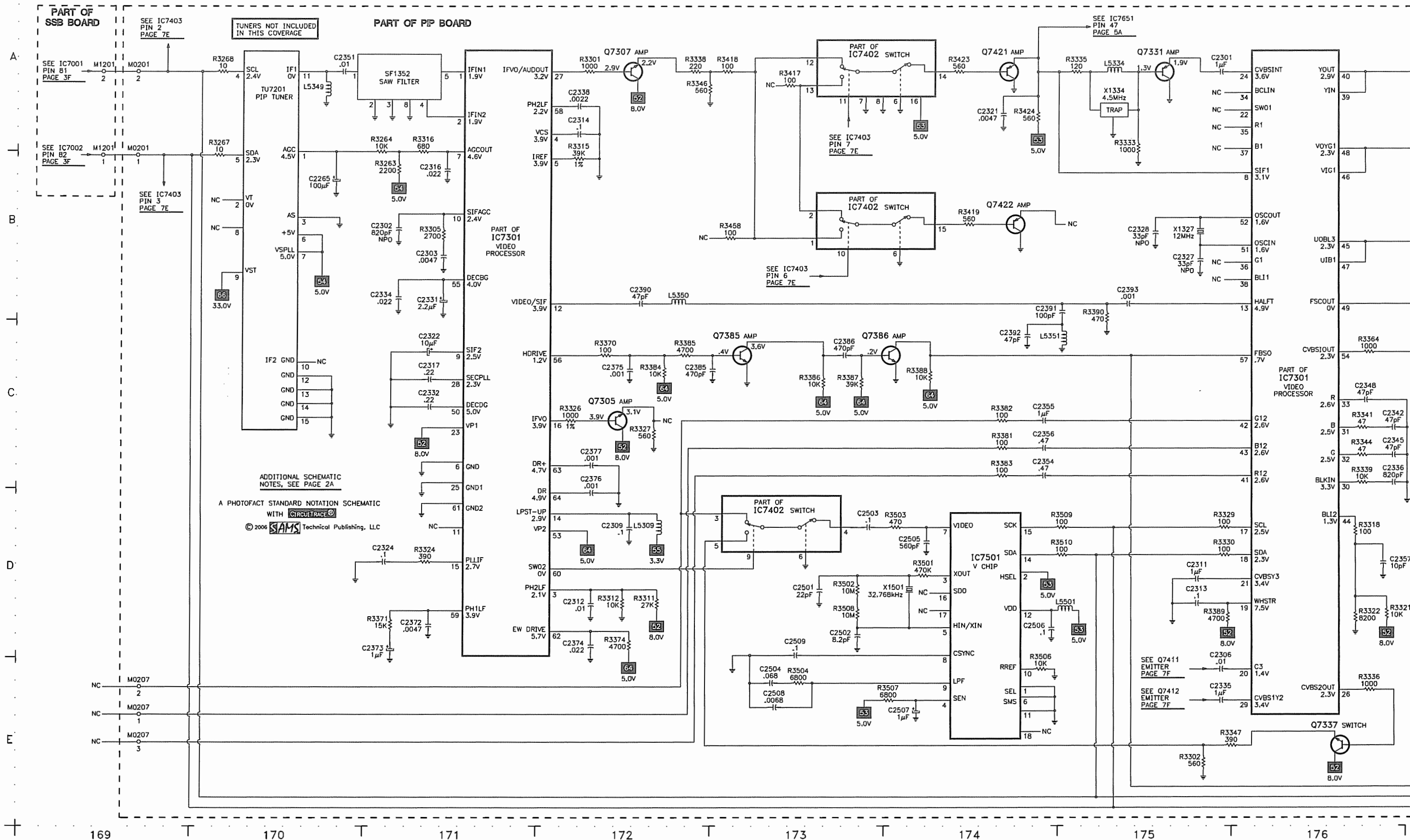
DVI SCHEMATIC

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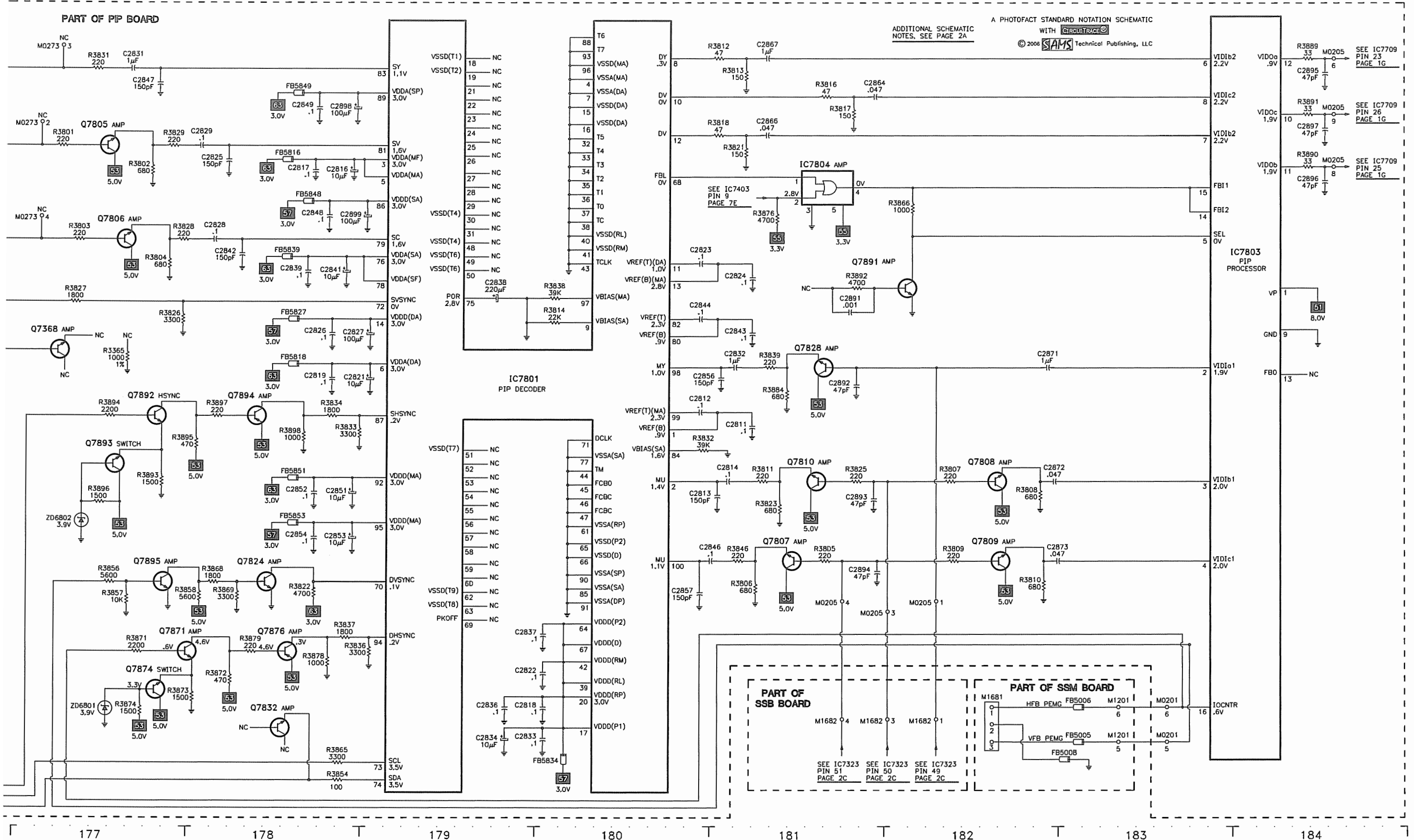




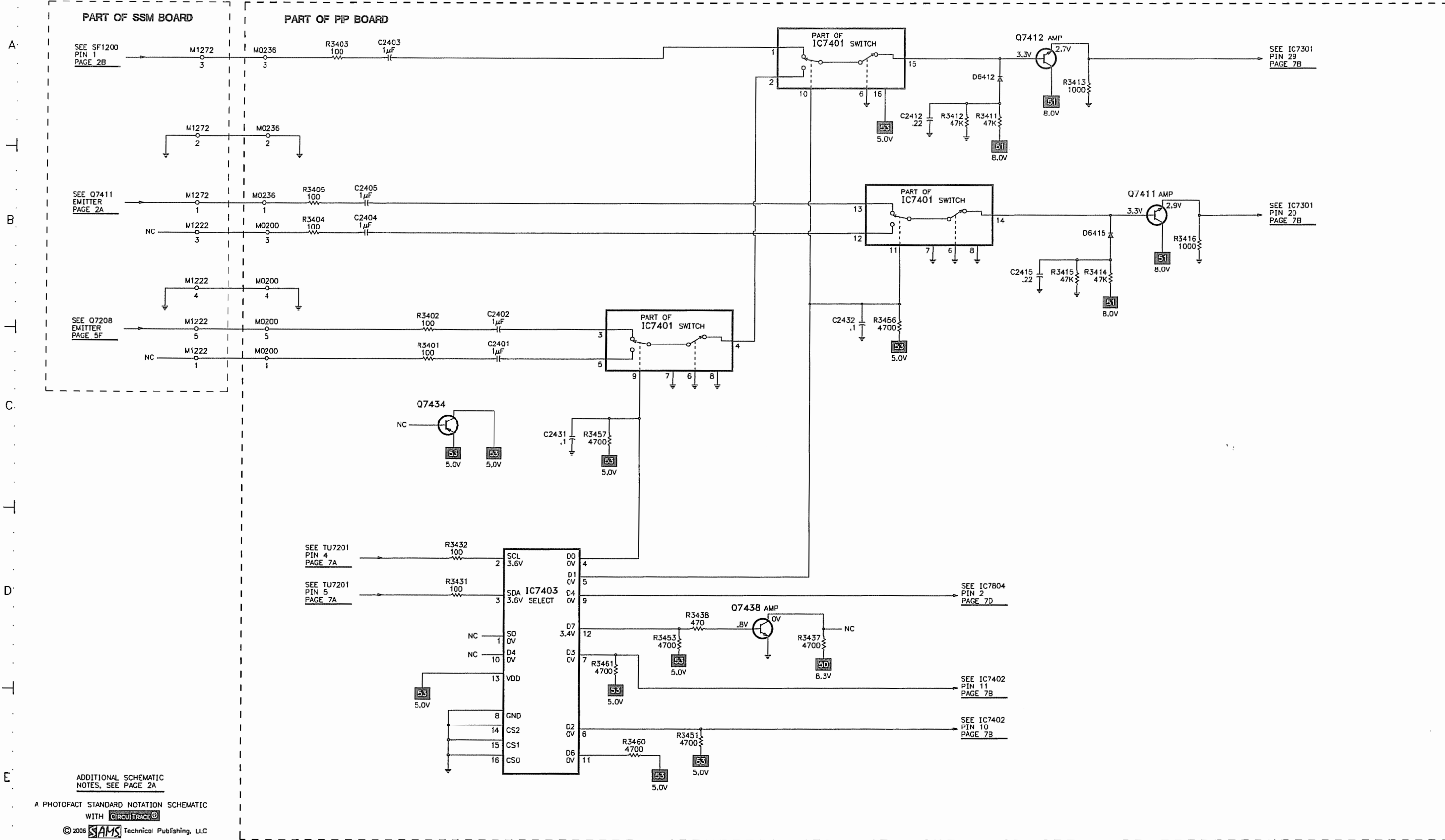
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PIP SCHEMATIC continued

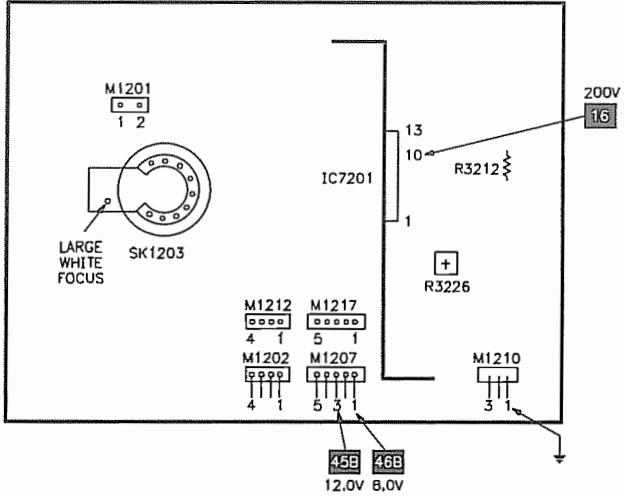


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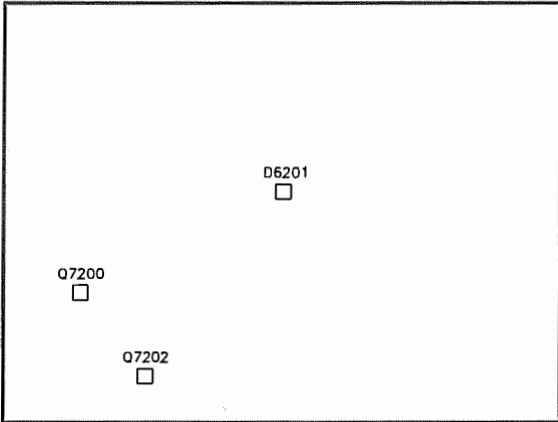


PLACEMENT CHART

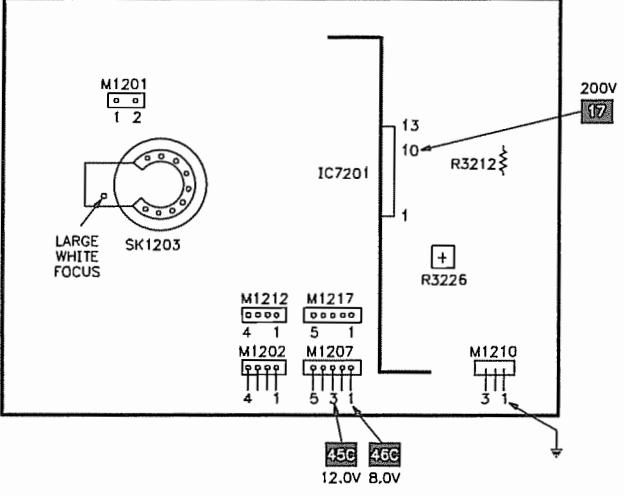
BLUE CRT BOARD - TOP VIEW



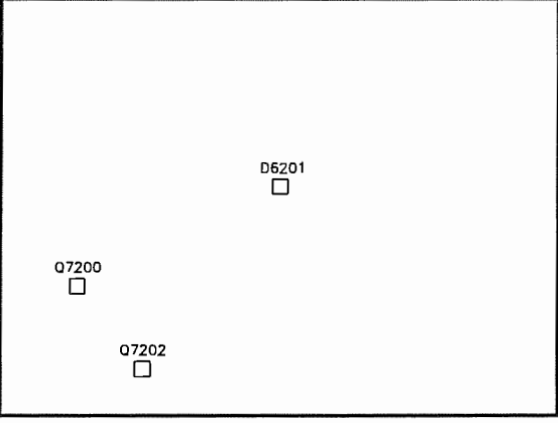
BLUE CRT BOARD - BOTTOM VIEW



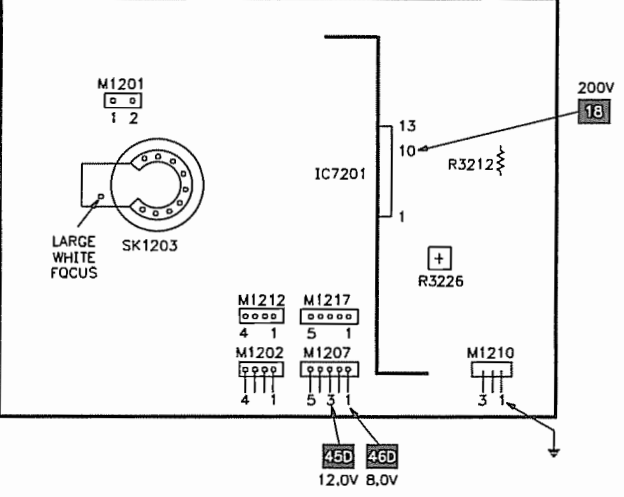
GREEN CRT BOARD - TOP VIEW



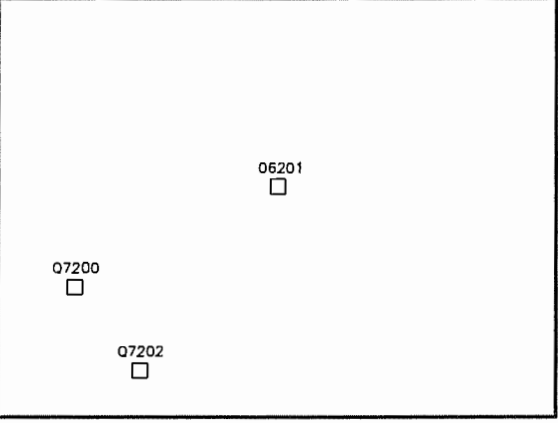
GREEN CRT BOARD - BOTTOM VIEW



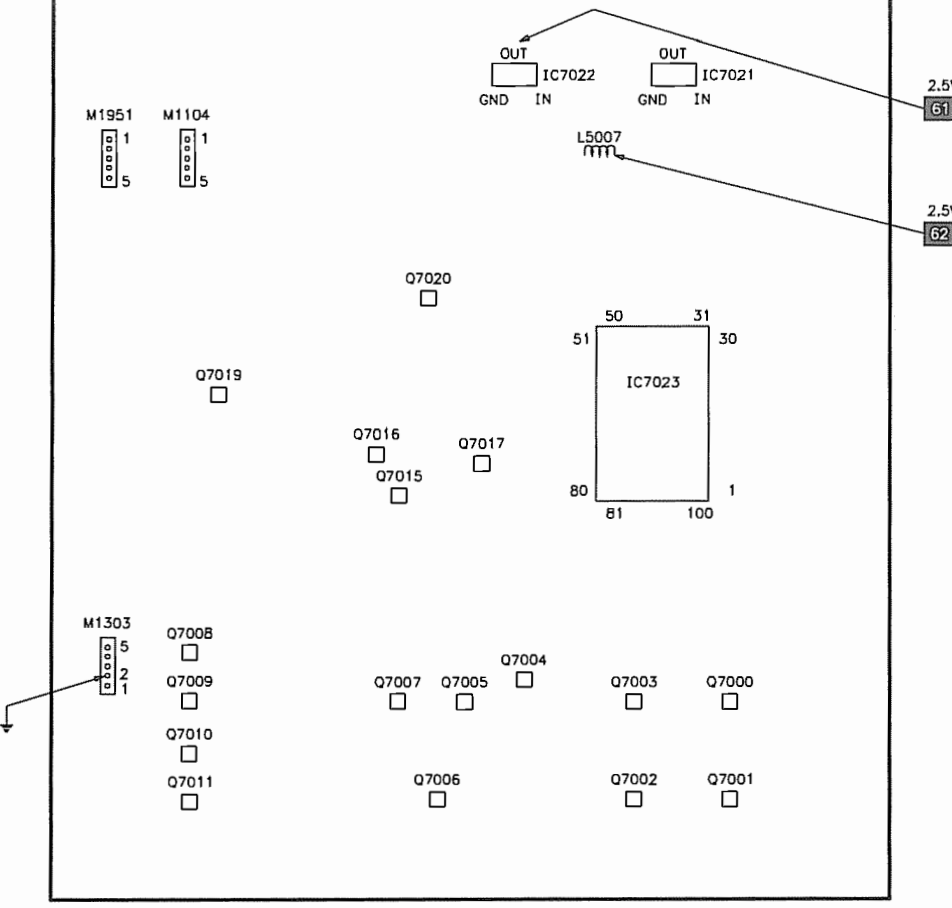
RED CRT BOARD - TOP VIEW



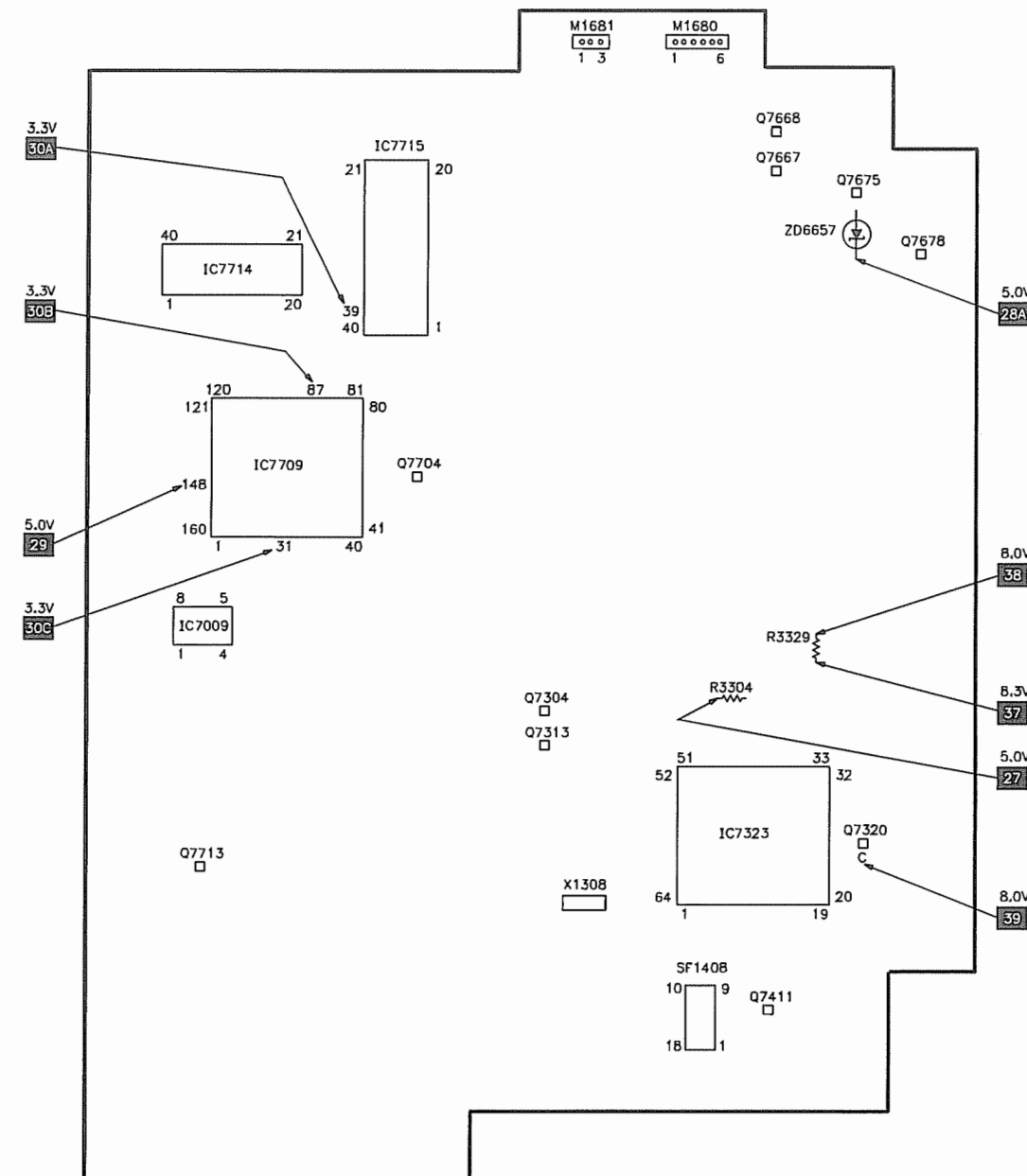
RED CRT BOARD - BOTTOM VIEW



COMB FILTER BOARD

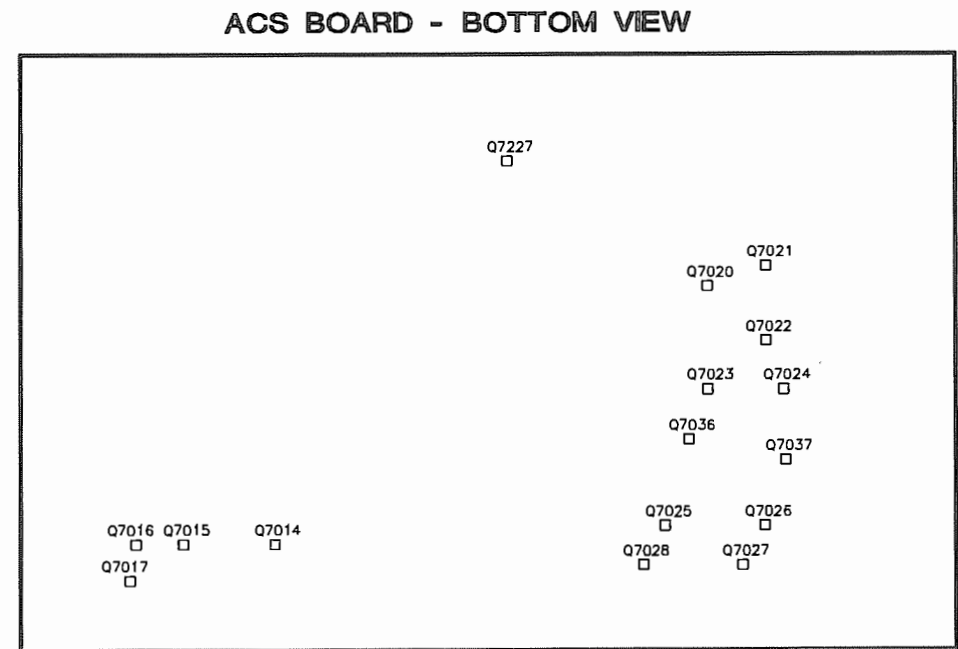
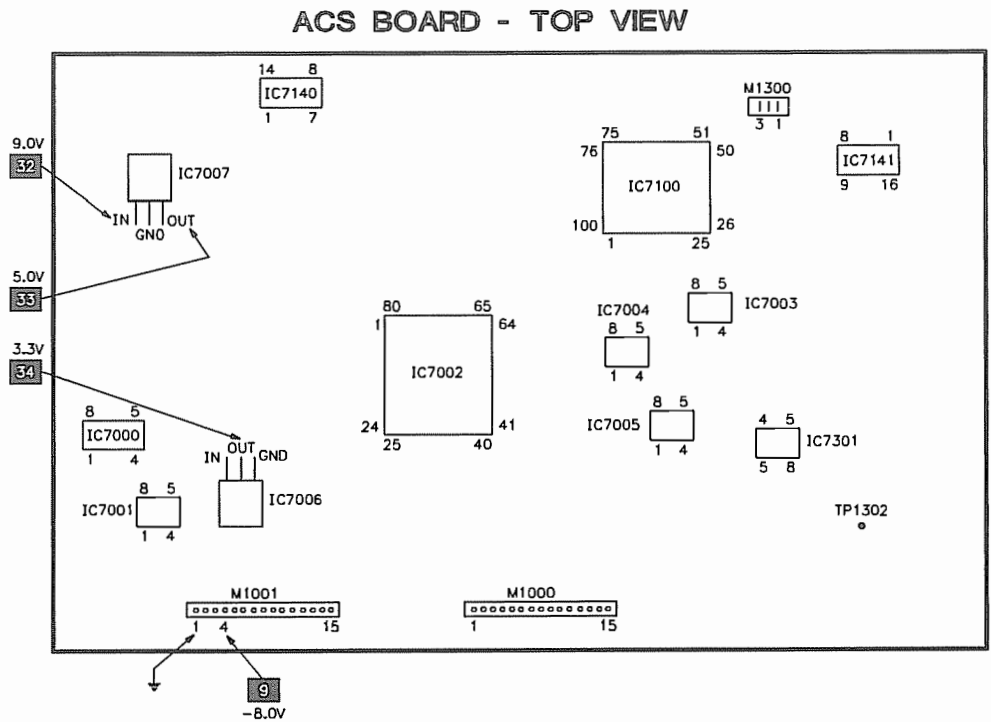
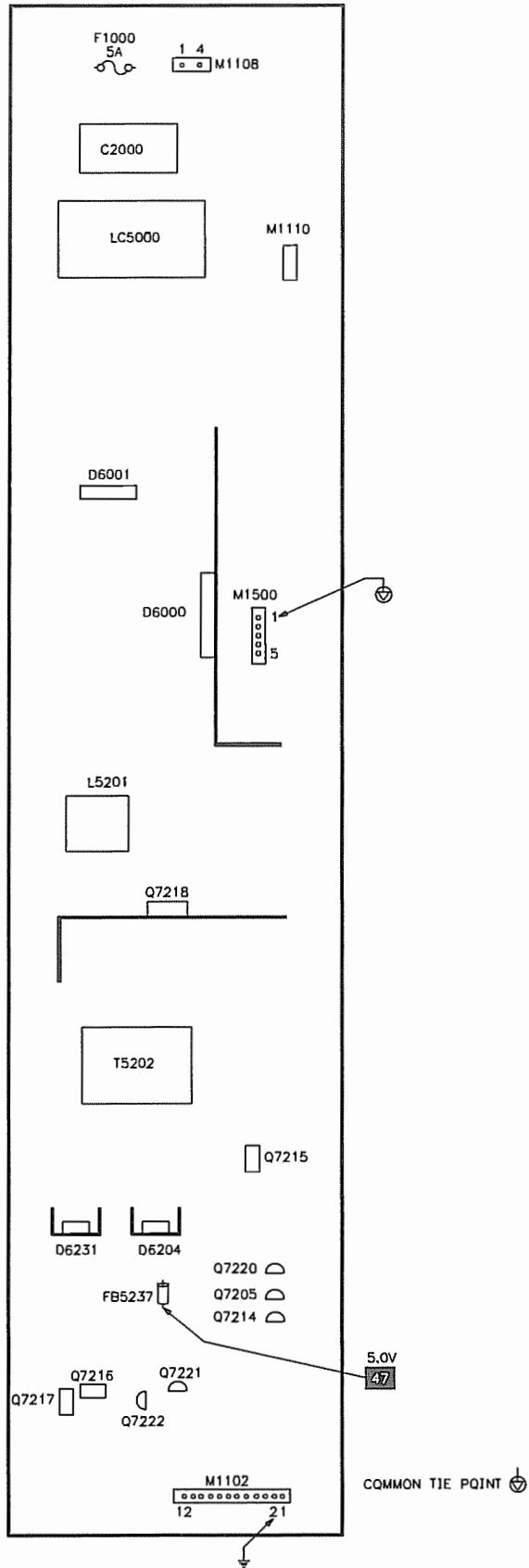
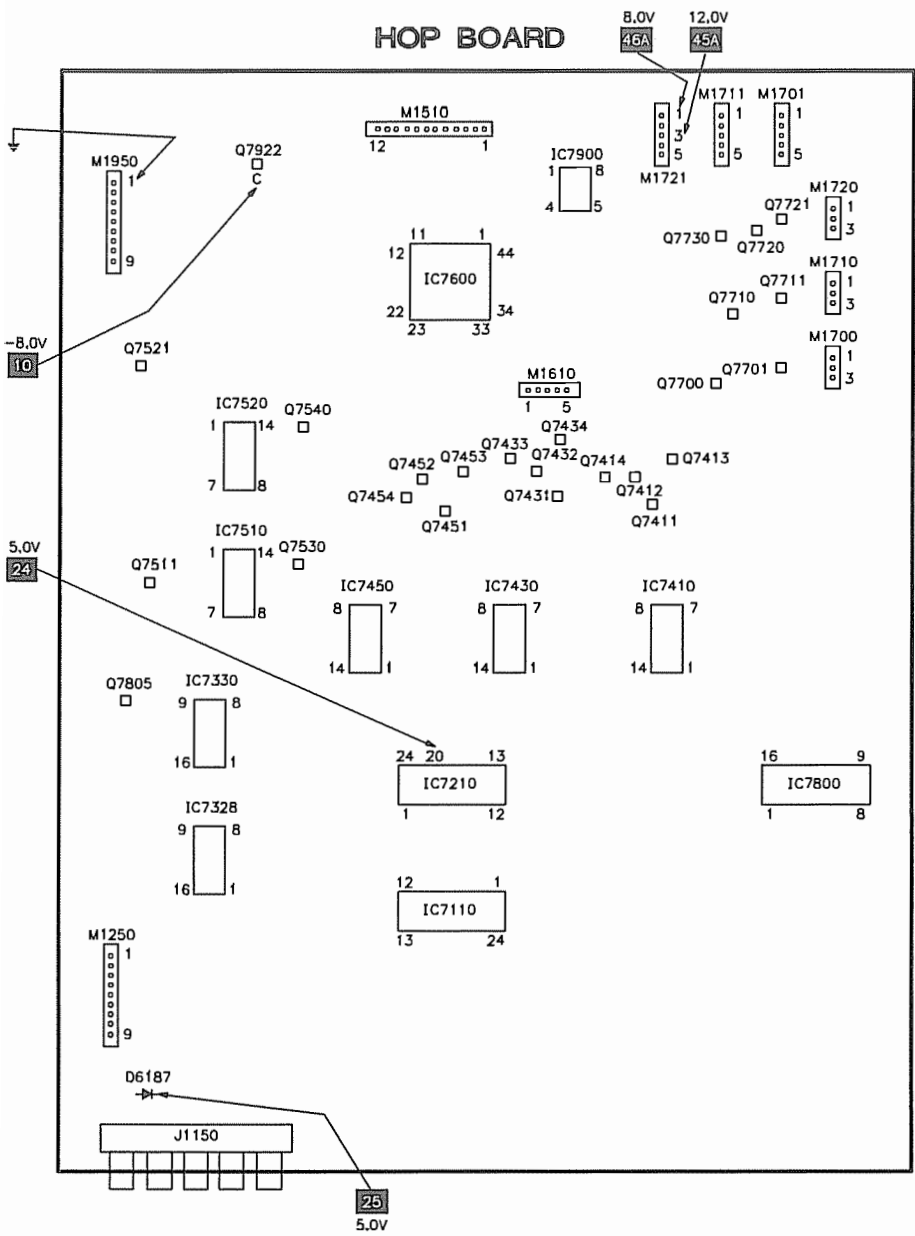


SSB BOARD - BOTTOM VIEW

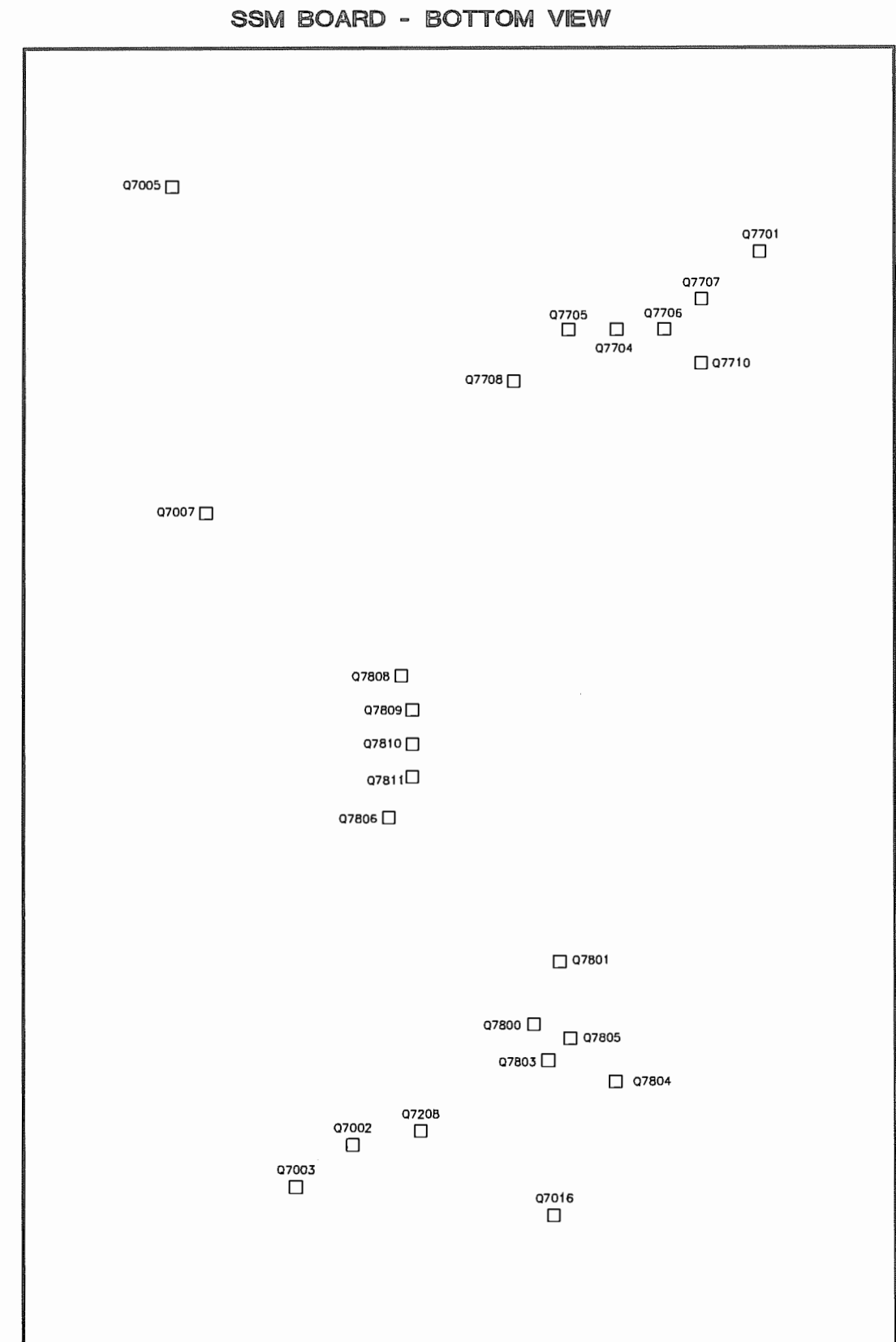
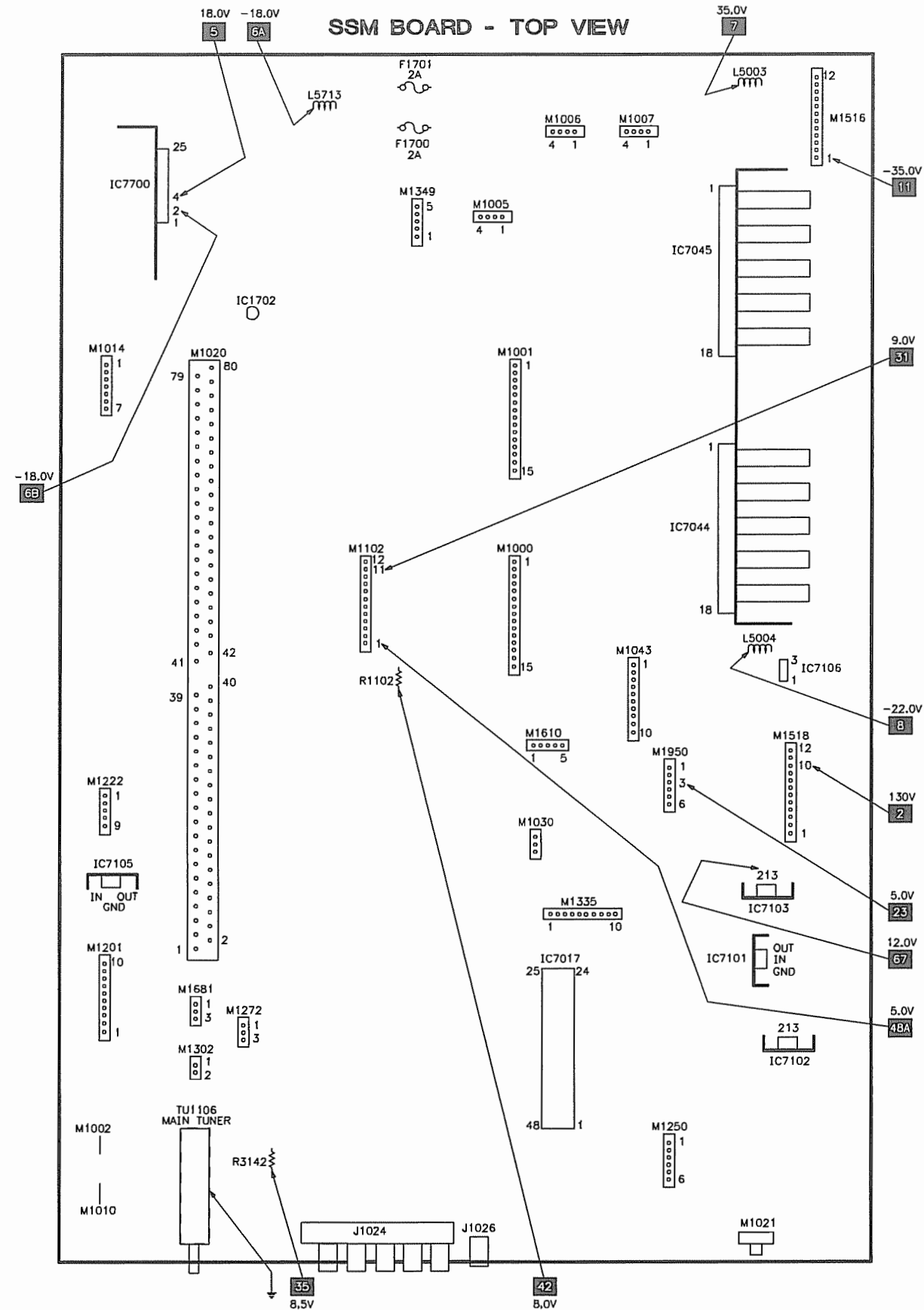


PLACEMENT CHART continued

POWER SUPPLY BOARD

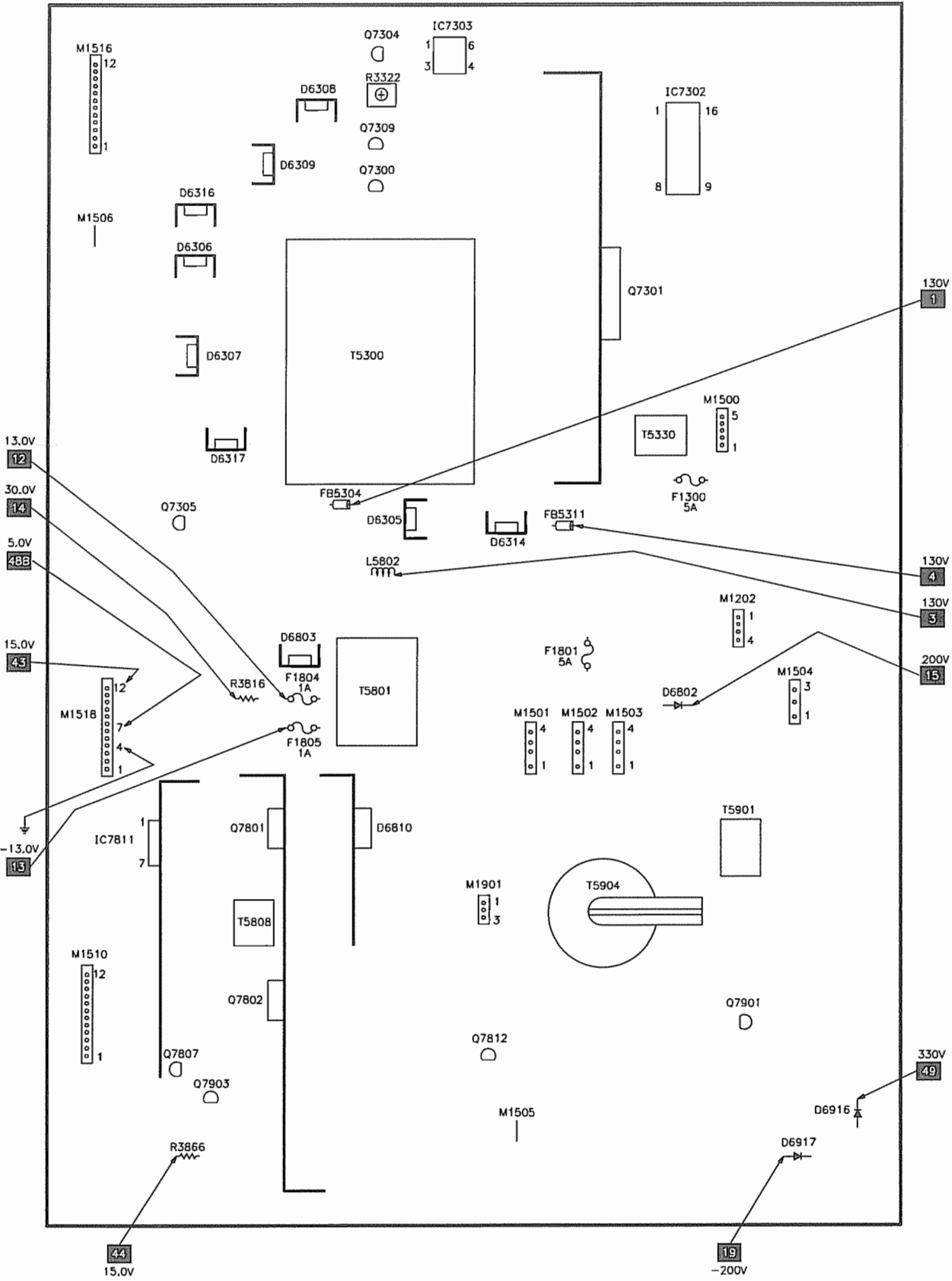


PLACEMENT CHART continued

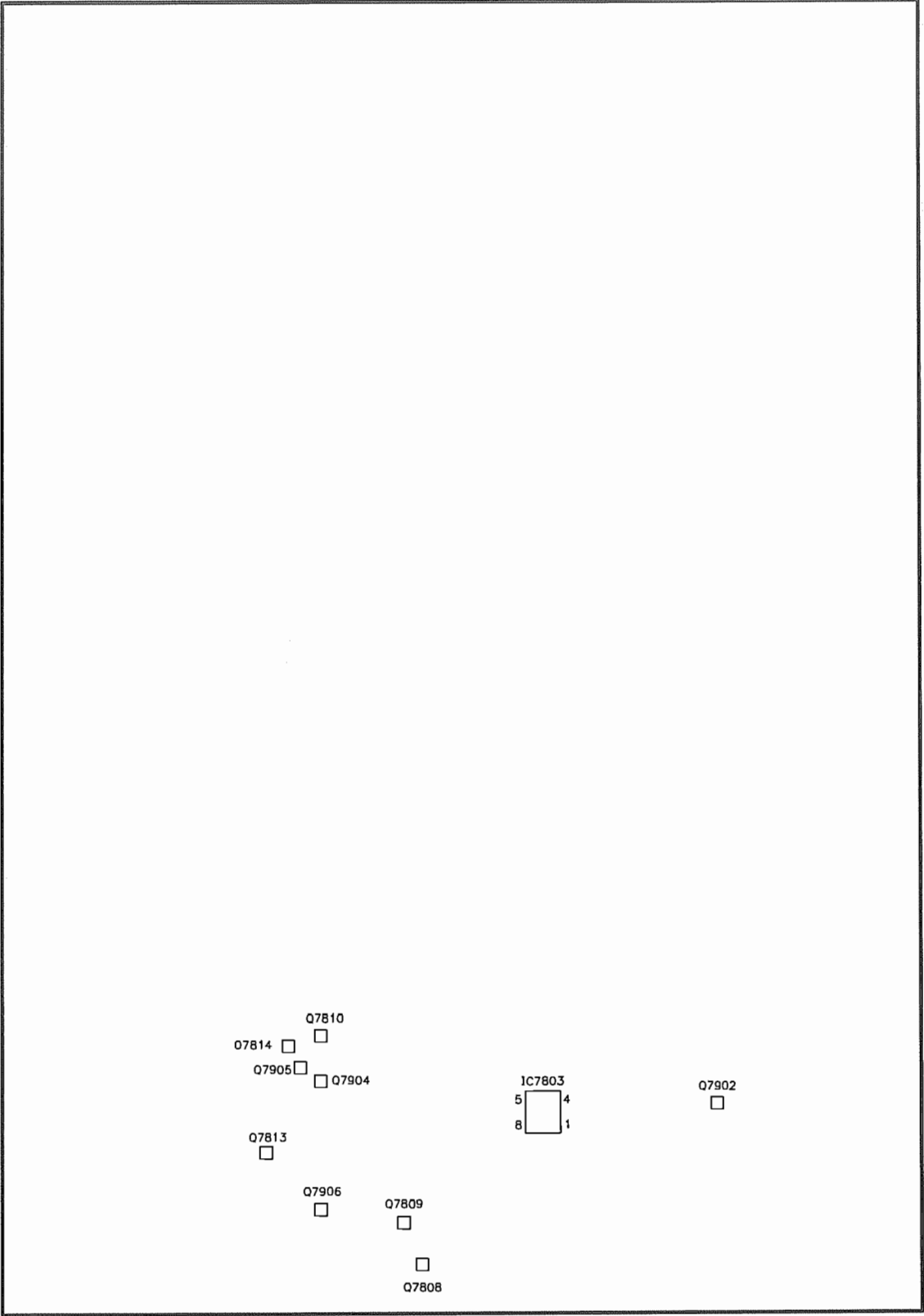


PLACEMENT CHART continued

LSB BOARD - TOP VIEW



LSB BOARD - BOTTOM VIEW



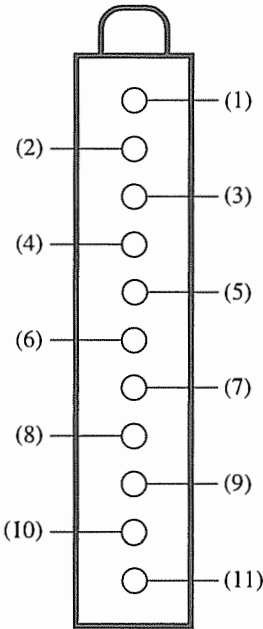
TUNER INFORMATION

MAIN TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
(1) AGC	4.0V	4.0V	3.9V
(2) TL1	.8V	4.6V	5.1V
(3) ADD	4.8V	4.2V	4.8V
(4) SCL	3.5V	3.3V	3.2V
(5) SDA	3.1V	3.1V	3.1V
(6) NC1	4.8V	4.8V	4.8V
(7) V SUPPLY	4.8V	4.8V	4.8V
(8) NC2	0V	0V	0V
(9) BTL	33.2V	33.3V	33.4V
(10) NC3	0V	0V	0V
(11) IF1	0V	0V	0V

NOTE: VHF Low Band voltages taken on channel 2.
VHF High Band voltages taken on channel 7.
UHF Band voltages taken on channel 14.

MAIN TUNER TERMINAL GUIDE



Measurements should be performed under the following conditions: Video: color bar signal and Audio: 3kHz left, 1kHz right.

SERVICE DEFAULT MODE (SDM)

The Service Default Mode (SDM) is a technical aid for the service technician. The SDM establishes fixed, repeatable settings of customer controls, which allow for consistent measurements. The SDM places the set in the following pre-defined conditions: tuning frequency set to channel 3; volume level set to 25% of the maximum volume level; other picture and sound settings set to 50%. The following functions are turned off while in SDM: timer and sleep timer. The following functions are disabled during SDM and enabled after leaving SDM: parental lock; blue mute; hospitality mode; and No IdentTimer, normally the set is automatically switched off when no video signal (IDENT) is received for 15 minutes. Remaining other controls will operate normally.

Entering Service Default Mode (SDM)

To enter the Service Default Mode (SDM), press the following button sequence on the remote: 0, 6, 2, 5, 9, 6, and menu buttons. Do not allow the display to time out between entries while keying the sequence. Upon entry into the Service Default Mode, the letters SDM will be displayed at the upper right corner of the screen.

Service Default Mode (SDM) Screen Display

SDM
HRS: 0279 SWID: LCHDR: 2US1-TTR-2-2.045
ERR: 0 0 0 0 0 0 0

Service Default Mode (SDM) Functions

The menu button on the remote switches between the Service Default Mode (SDM) and the normal user menus, with SDM still active in the background. The status button on the remote is used to toggle the OSD, except SDM, on and off to prevent the OSD from interfering with measurements and oscilloscope waveforms. To access the Service Alignment Mode (SAM) while in SDM, press volume + and volume – buttons on the set simultaneously for at least 4 seconds.

Exiting Service Default Mode (SDM)

To exit the Service Default Mode (SDM), press the power button. To save the error codes, unplug the AC power without turning off the set. When the power is turned back on, the SDM will still be active.

SERVICE ALIGNMENT MODE (SAM)

The Service Alignment Mode (SAM) is used to align the set and adjust the option settings and to display/clear the error code buffer values.

Entering Service Alignment Mode (SAM)

To enter the Service Alignment Mode (SAM), press the following button sequence on the remote: 0, 6, 2, 5, 9, 6, and status buttons. Do not allow the display to time out between entries while keying the sequence. It is also possible to enter SAM by pressing volume + and volume - on the set simultaneously for at least 4 seconds when the set is in SDM.

MISCELLANEOUS ADJUSTMENTS

Exiting Service Alignment Mode (SAM)

To exit the Service Alignment Mode (SAM), press the power button. To save the error codes, unplug the AC power without turning off the set. When the power is turned back on, the SAM will still be active.

Service Alignment Mode (SAM) Screen Display

SDM
HRS: 127A SWID: LCHDR: 2US1-TTR-2-2.045
ERR: 0 0 0 0 0 0 0
OPT: 254 122 247 174 64 0 0 0

CLEAR ERRORS >
OPTIONS >
TUNER >
SMART SETTINGS >
GDE SAM >

Service Alignment Mode (SAM) Menu Control

Menu items may be selected using the cursor up or down buttons. Selected item will be highlighted. Pressing the cursor up or down buttons on the remote will display the next or previous menu items, when applicable. With the cursor left or right buttons, it is possible to: activate or deactivate the selected menu item; change the value of the selected menu item; and activate the selected submenu.

NOTE: Pressing the menu button on the remote switches between SAM and the normal user menus, with SAM still active in the background. Pressing the menu button in a submenu will return the screen to the previous menu.

Clear Errors

Select CLEAR ERRORS while in SAM to clear error code buffer. The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, the error code will appear at the left side and all other errors shift one position to the right. The error code buffer will be cleared in the following cases: when activating CLEAR ERRORS in SAM menu; when exiting SDM or SAM with the standby command on the remote; or upon automatic reset when content has not changed for 50 consecutive hours. By leaving SDM or SAM via the power switch, the error buffer will not be reset.

To erase the contents of the error buffer, select the CLEAR ERRORS menu item and press the cursor left or right button. The contents of the error buffer are then cleared.

In case of non-intermittent faults, clear the error buffer before starting the repair. If possible check the entire content of the error buffers. In some situations an error code is only the result of another error code. A fault in the protection detection circuitry can also lead to a protection.

Tuner

Select TUNER while in SAM.

Item	Range	Value
IF-PLL OFFSET	0 ~ 127	87
AGC	0 ~ 63	22
AFA	0, 1 (Read Only)	1
AFB	0, 1 (Ready Only)	1

Smart Settings

Select SMART SETTINGS while in SAM.

PERSONAL

Item	Range	Value
MOVIE BGT	0-99	50
MOVIE COL	0-99	50
MOVIE PIC	0-99	50
MOVIE SHP	0-99	84
MOVIE TINT	0-99	0
MOVIE 2FH SHP	0-99	84
SPORT BGT	0-99	50
SPORT COL	0-99	59
SPORT PIC	0-99	54
SPORT SHP	0-99	70
SPORT TINT	0-99	0
SPORT 2FH SHP	0-99	70
WEAK BGT	0-99	50
WEAK COL	0-99	40
WEAK PIC	0-99	40
WEAK SHP	0-99	28
WEAK TINT	0-99	0
WEAK 2FH SHP	0-99	28
MULTI BGT	0-99	50
MULTI COL	0-99	40
MULTI PIC	0-99	40
MULTI SHP	0-99	70
MULTI TINT	0-99	0
MULTI 2FH SHP	0-99	70

MISCELLANEOUS ADJUSTMENTS continued

GDE SAM

Select GED SAM while in SAM.

	GDE SAM INPUT 480P
SWID: GDE 1.28 ERR:	
DISPLAY MODE	480P
SERV BLANK	OFF
GEOMETRY	>
PICTURE	>
WHITE TONE	>
CLAMP PULSE	NORMAL
CONV PROC	ENABLED

In this menu, the DISPLAY MODE can be selected. If the input signal is NTSC, the selection should be 480p. The selection SERV BLANK causes the bottom half of the screen to blank. This selection is useful when adjusting the yoke rotation. The CONV PROC selection allows for the disabling of the convergence drive.

Default values should be entered when the SSB board has been changed. When the CRTs have been changed, the display should be centered using the centering rings on the CRT. The center point can be found by placing a string from corner to corner or by using the center point on the convergence template. In the 4x3 aspect ratio sets, there are three geometry settings, and in the 16x9 aspect ratio sets, there are two geometry settings. Make sure the set is in the mode that is being adjusted and that the correct signal is applied.

GDE SAM Defaults Table

GDE SAM Register Name	Default Value 480p	Default Value 1080i
SERV BLANK	OFF	OFF
GEOMETRY		
WIDE BLANK	7	7
HOR SHIFT	23	21
HOR. PARALLEL	8	8
EW. WIDTH	29	42
EW. PARA	36	(1)
EW. TRAP	31	31
HOR. BOW	7	7
VER. SLOPE	40	(2)
VER. AMPL	38	(3)
S CORR	31	31
VER. SHIFT	31	31
FAST BLANK	0	0

- (1) 1080i Full 36, 1080i Compressed 31.
(2) 1080i Full 36, 1080i Compressed 38.
(3) 1080i Full 37, 1080i Compressed 11.

PICTURE		
BRIGHTNESS	31	31
PICTURE	31	31
COLOR	31	31
TINT	31	31
SHARPNESS	31	31
SUB-BRIGHT	31	31

GDE SAM Register Name	Default Value 480p	Default Value 1080i
WHITE TONE		
NORMAL CUTOFF RED	35	35
NORMAL CUTOFF GREEN	34	34
NORMAL CUTOFF BLUE	31	31
NORMAL DRIVE RED	20	20
NORMAL DRIVE GREEN	43	43
NORMAL DRIVE BLUE	31	31
COOL CUTOFF RED	0	0
COOL CUTOFF GREEN	0	0
COOL CUTOFF BLUE	0	0
COOL DRIVE RED	-7	-7
COOL DRIVE GREEN	-6	-6
COOL DRIVE BLUE	0	0
WARM CUTOFF RED	0	0
WARM CUTOFF GREEN	0	0
WARM CUTOFF BLUE	0	0
WARM DRIVE RED	+7	+7
WARM DRIVE GREEN	+4	+4
WARM DRIVE BLUE	-6	-6
CLAMP PULSE	NORMAL	HDTV
CONV PROC	ENABLED	ENABLED

CONVERGENCE AND GEOMETRY

Read through this adjustment before performing any adjustments. The set should be allowed to warm up for at least 20 minutes before any adjustments are made. This set incorporates a Digital Convergence System using 208 adjustment points. The convergence processor is located on the ACS (Automatic Convergence System) board. The convergence drive circuits are located on the SSP (Small Signal Panel) board. Data for the convergence settings are stored in the EEPROM located on the ACS board. Data for geometry is stored in the EEPROM located on the SSB (Small Signal Board) board. If the CRTs, the LSP (Large Signal Panel) board, or the SSB board are changed, a complete geometry and convergence alignment will be necessary. If the ACS board, the SSP, or CRTs are changed, a complete convergence alignment will be necessary. To obtain the correct geometry during convergence, a template must be used. Models 55PP9502/84, 55PP9502/99, 55PP950201, and 55PP950217 are basic versions and use ST4181 template. Models 60PP9502/17, 60PP9502/99, and 60PP950201 are core versions and use ST4182 template.

Sets with 4x3 aspect ratio have three convergence and geometry settings. Sets with 16x9 aspect ratio sets have two convergence and geometry settings. Sets with 4x3 aspect ratio have a 480p mode, a 1080i full screen mode, and a 1080i compressed mode. There are geometry and convergence settings for each mode.

There are two chassis versions: basic and core. The core version has an Automatic Convergence System called Intellisense. The Intellisense system makes minor changes in the convergence to compensate for changes in the magnetic field from one location to another. In the convergence procedure, both versions have the setup for the Intellisense sensors. If TEST SENSORS is selected in the basic version a message will appear on the screen indicating that the sensors are not working. In the basic version, the results of the sensor test are not applicable.

When performing convergence or geometry alignments, correct signal must be applied to the set. This is necessary to provide the correct horizontal and vertical sync to the convergence circuits. Failure to do so will result in an out of convergence picture. NTSC signal should be used when adjusting

the 480p mode. A 1080i signal should be applied to the set when using the HD mode. The HD should have a horizontal frequency of 33.75kHz and a vertical frequency of 60Hz. There are two geometry and convergence alignments in the HD mode for the 4x3 aspect ratio set. The two modes are a full screen mode 4x3 and a 16x9 compressed mode. Select these in the customer menu.

This adjustment procedure is divided into the following sections: Screen Centering; Geometry Alignment; Convergence Alignment; and Grey Scale Alignment.

If the ACS board has been replaced, the following adjustments should be performed in the following order: Geometry; Convergence; and Grey Scale.

If the LSB board has been changed, the following adjustments should be performed in the following order: Screen Centering; Geometry; and Convergence.

If the CRTs have been changed, the following adjustments should be performed in the following order: Screen Centering; Geometry; Convergence; and Grey Scale.

If the SSM board has been changed, the Convergence adjustment should be performed.

Geometry Alignment

The Geometry alignment data is stored in the NVM located on the ACS board. Whenever the ACS board or the LSB board has been changed, a geometry alignment will be needed. The geometry alignment is performed in the GDE SAM alignment mode. To enter the SAM mode, press 0, 6, 2, 5, 9, 6, and index buttons on the remote. Be sure the set is in the mode in which you wish to align before entering the SAM mode. Use the AV button on the remote to select the input with a signal applied after entering the SAM mode. The following will appear after entering the SAM mode. Press the cursor down button on the remote to view SMART SETTINGS and GDE SAM.

SAM	
HRS: 0015 SWID:	LCHDR: 2US1-EMB1.439
ERR: 0 0 0 0 0 0 0 0	
OPT: 124 247 189 100 64 0 0 0	
CLEAR ERRORS	>
OPTIONS	>
TUNER	>
SMART SETTINGS	>
GDE SAM	>

Geometry settings are located in the GDE SAM mode. Press the cursor down button to highlight the GDE SAM, press the right cursor button to select. The following will appear:

SWID: GDE 0.20	GDE SAM
ERR: AINO	INPUT 480P
DISPLAY MODE	480P
SERV BLANK	OFF
GEOMETRY	>
PICTURE	>
WHITE TONE	>
CLAMP PULSE	NORMAL
CONV PROC	ENABLED

If the CRTs have been replaced, screen centering adjustment will be necessary. Apply a crosshatch pattern to the set. Cursor down to CONV PROC in the menu and press the right cursor button to select. This will disable the convergence drive. Select GEOMETRY in the menu and enter the following default values for the mode being adjusted. Other mode values can be entered by selecting a different DISPLAY MODE in the menu. Most times, no additional adjustment will be necessary.

Geometry Default Values

Item	Default Value Mode 1 480p	Default Value Mode 2 1080i
Wide Blank	7	7
Hor. Shift	24	21
Hor. Parallel	8	8
EW Width	31	44
EW Para	45	45
EW Trap	31	31
Hor. Bow	7	7
Ver Slope	40	33
Vertical Ampl	40	(1)
S Corr	31	31
Vert Shift	31	31
Fast Blank	0	1

(1) 1080i Full 40, 1080i Compressed 12.

To exit the Service Alignment Mode (SAM), press the menu button to return to the main SAM menu. Then turn the set off.

CONVERGENCE ALIGNMENT

Enter the Convergence Alignment mode, by pressing 0, 6, 2, 5, 9, 7, and index buttons on the remote. Listed below is a map of the convergence menus. Be sure that a signal is applied to the set for the mode being adjusted. Be sure that the set is in the mode you wish to adjust before entering the Convergence Alignment mode.

Display Convergence Menu Flow Diagram

Use the cursor up or down button to highlight the selection. Press the cursor right button to make the selection. In the second menu, MANUAL CONVERGENCE WO VIDEO means the screen behind the adjustment grid will be blank. MANUAL CONVERGENCE W VIDEO displays the applied video behind the adjustment grid. RESTORE FACTORY loads the values from the last saved convergence alignment. RESTORE DEFAULT loads values from the ROM on the ACS Microprocessor. If the ACS board has been changed, there may not be data in the NVM for RESTORE FACTORY. The RESTORE DEFAULT settings will then be loaded. Loading default values will overwrite all of the convergence modes.

An internally generated grid will be displayed in the convergence mode. Shaded area is the screen area. Horizontal lines A and M are displayed on the top and bottom edge of the visible screen area. Lines 1 and 15 are also displayed on the left and right edge of the visible screen area. Vertical line 0 is adjustable, but not visible.

MISCELLANEOUS ADJUSTMENTS continued

Green Geometry

The green geometry must first be done when performing a complete convergence alignment. A screen template is needed to obtain the correct geometry. Failure to use the screen template or misalignment of the convergence will result in reduced life of the convergence amplifiers.

Place the screen template on the screen. Select GREEN in selection menu. The cursor will appear in the center of the screen.

When the ACS board has been replaced and default settings have been loaded, the following procedure should be used to adjust the convergence. Or use the cursor up or down and right or left buttons to navigate to the area to be adjusted. Press the menu button to adjust then use the cursor buttons to move the green cross onto the template. The adjustment of the cross has two step sizes, large and small. Use the menu button to toggle between the two. After a point has been adjusted, press index button to return to navigate. When default settings have been loaded, the leftmost line that is not visible should be adjusted first. Adjust the vertical line 0 while observing line 1 to make line 1 parallel with the left edge of the screen. The adjustment should be made in small steps. Do not adjust any one point more than 1/4 the distance of one grid. After the left most line is adjusted, start at the center left of the screen and work to the right, aligning the horizontal line. When adjusting the horizontal lines, best results are obtained when working from left to right. After the center line is adjusted, go to the next line down until all of the lines have been adjusted. Work from the center up to adjust the horizontal lines. Using the same method, work from center out to adjust the vertical lines. A minimum of three passes will be necessary to complete the alignment. Press the index button to return to the selection menu.

When the green geometry is complete, store the data. Remove the template from the screen, and select red to green in the selection menu. Use the same method that was used to adjust the green grid to the template, adjust the red grid onto the green grid.

When the red to green is complete, select the blue to green and use the same alignment method. Each time data is stored, the Intellisense circuit will recalculate the position of the four sensors in the set.

Repeat the adjustment for each of the remaining modes as necessary.

GRAY SCALE ALIGNMENT

- 1. Place the input to the RGB (Aux 5) or YPb Pr (Aux 4) mode. Connect a computer or computer monitor generator to the Aux 5 input or a component generator to Aux 4.
- 2. Preset G2 controls counterclockwise.
- 3. Turn green G2 clockwise to make the menu visible.
- 4. Enter GDE SAM mode by entering 0, 6, 2, 5, 9, 6, and Index buttons on the remote. Select WHITE TONE.
- 5. Set the brightness, picture, and sharpness to their center position. Select a black raster pattern on the computer or computer monitor generator.
- 6. Place a scope set to measure DC on each cathode to determine the dominant (lowest) color.
- 7. Adjust the SUB BRIGHTNESS control to set the black level equal to 180V on the scope.
- 8. Move the probe to the remaining cathodes and adjust the corresponding cutoff registers to make the black part of the waveform at 180V.
- 9. Set the corresponding G2 control to just make cutoff for the black part of the waveform for that CRT.
- 10. Remove the scope.
- 11. Apply a grayscale pattern to the set.

- 12. Adjust the drive controls to achieve proper white balance.
- 13. Press the menu button to return to the SAM menu. Exit the SAM mode by turning the set off.

ELECTRICAL FOCUS ADJUSTMENT

Before starting the following adjustment procedures set the picture, sharpness, brightness, and tint controls to midrange and the color control to minimum.

- 1. Remove the back cover of the set and the light shield, turn the set on and apply an NTSC crosshatch pattern signal into the antenna terminal. The crosshatch pattern will appear clearer if the front of the screen is covered with a dark cloth.
- 2. Cover two of the CRT output lenses with cardboard pieces, or other non-conductive opaque material, to observe the magnified reflection of the other CRT on the back side of the viewing screen.
- 3. Adjust the CRT’s focus control, located on the focus block, for the sharpest raster image.
- 4. Confirm correct focus by viewing the screen from the front of the set.
- 5. Repeat steps 2 through 4 to adjust the focus of the two remaining CRT’s.

OPTICAL FOCUS

Before beginning the following adjustment procedures, set the picture, sharpness, brightness, and tint controls to midrange and the customer color control to minimum.

- 1. Remove back cover of the set and the light shield, turn the set on and apply an NTSC crosshatch pattern signal into the antenna terminal. The crosshatch pattern will appear clearer if the front of the screen is covered with a dark cloth.
- 2. Cover two of the CRT output lenses with cardboard pieces, or other non-conductive opaque material, and observe the magnified reflection of the other picture tube on the backside of the viewing screen.
- 3. Loosen the lens retaining wing nuts on the CRT focus assembly.
- 4. Move the wing nut in the slot of the uncovered lens to locate the optimum optical focus, viewing the picture from the back side of the screen, re-tighten the wing nut.
- 5. Confirm correct focus by viewing the screen from the front of the set.
- 6. Repeat steps 2 through 5 to adjust the focus of the two remaining CRT’s.

CUSTOMER SERVICE MODE (CSM)

All HDRPTV sets are equipped with the Customer Service Mode (CSM). CSM is a special service mode that can be activated and deactivated by the customer, by request of the service technician/dealer in order to identify the status of the set. This CSM is a read only mode, and modifications in this mode are not possible.

Entering the Customer Service Mode.

To enter the Customer Service Mode press the mute button on the remote and any button on the set (channel up, channel down, volume up, volume down) simultaneously for at least 4 seconds.

Once the CSM is activated picture and sound settings are set to nominal levels and modes that interfere with the behavior of the set are switched off (sleep timer, auto standby, etc.).

NOTE: When CSM is entered, CSM may flash or may stay constant in the upper right corner.

Changing the system setting of a preset.

Press the menu button on the remote. Select the INSTALL sub menu. Select the MANUAL STORE sub menu. Select and change the SYSTEM setting until picture and sound are correct. Select the STORE menu item.

Exit the Customer Service Mode.

To exit the Customer Service Mode press any button on the remote except channel up or channel down buttons. Switch off the set by pressing the power button on the remote or the set. Exiting CSM resets the set back to its initial values.

The Customer Service Mode Information Screen

Upon entry into the Customer Service Mode the following screen will appear.

Display of CSM Screen

CSM
1 HRS: 027A SWID: LCHDR: 2US1-TTR-2-2.045
2 CODES: 0 0 0 0 0 0 0
3 OPT: 254 122 247 174 64 0 0 0
4
5 No Signal
6
7
8
9
10 SOURCE: 96
11 SOUND: MONO
12 VOLUME: 0
13 BALANCE: 1
14 TINT: 50
15 COLOR: 41
16 BRIGHTNESS 50
17 PICTURE 41

The Customer Service Menu shows the following information:

Line 1 HRS: nnnn and SWID: 2US1-BBC-X.YY. HRS: indicates the accumulated total of operational hours in hexadecimal format, standby hours are not counted as operating hours. SWID: indicates software identification of the main microcontroller. 2US1-TTR-100. US1 indicates the software type and the supported languages, US is NAFTA region, 1 is the main software language version number and 2.045 is the subversion number.

Line 2 CODES: is the error code buffer and displays the last 7 errors.

Line 3 OPT: option bits control software and hardware functionality. An option byte or option number represents 8 of those bits. Each option number is displayed as a number between 0 and 255. The set may not work correctly when an incorrect option code is set.

Line 4: SYSTEM : AUTO. Indicates which color and sound system is installed for this preset: NTSC, PAL,SECAM.

Line 5: NO SIGNAL. Indicates that the set is not receiving an ident signal on the selected source. This may be caused by: absent or bad antenna signal or antenna not connected; no preset channel is stored at this program number; or the tuner is faulty. If the tuner is the problem line 2: CODES will contain number 13 or 16; check the tuner and replace or repair if necessary.

Line 6: TIMER ON. Indicates that the on/off timer is running. The following may be caused by the activation of the sleep timer: the set may turn on from standby or may switch to a different channel without using either the remote or the set. To switch off the activation timer: select TIMER in the FEATURE menu; select ACTIVATE in the TIMER menu. Set to OFF with the left or right cursor button.

Line 7: CHANNEL BLOCKED. Indicates that all channels are locked except the selected channel. The following may be generated due to locked channels: set cannot be switched on from standby with the set buttons; or channel up and channel down buttons on the set do not function. Use remote to disable the LOCK feature: select FEATURE menu; select LOCK; and set to OFF.

Line 8: NOT PREFERED. Indicates that at least one channel is deleted as a preferred channel, by default, all channels are skipped. SKIPPED will always be displayed in CSM unless all the channels are not skipped. To add a channel as a selected channel to the list of preferred channels: select INSTALL menu; CHANNEL EDIT; ADD/DELETE; and set to ADD with the left or right cursor buttons.

Line 9: HOTELMODE ON. The Hotel mode has been activated.

Line 10: SOURCE. Indicates which SOURCE is installed for this preset: AV1; AV2; SVHS2; or channel number (8).

Line 11: SOUND. Indicates which sound mode is installed for this preset: Mono; Stereo; SAP; NICAM; L1; L2; Virtual; or Digital.

Line 12: VOLUME. Value indicates level at CSM entry.

Line 13: BALANCE. Value indicates level at CSM entry.

Line 14: TINT. Value indicates level at CSM entry.

Line 15: COLOR. Value indicates level at CSM entry.

Line 16: BRIGHTNESS. Value indicates level at CSM entry.

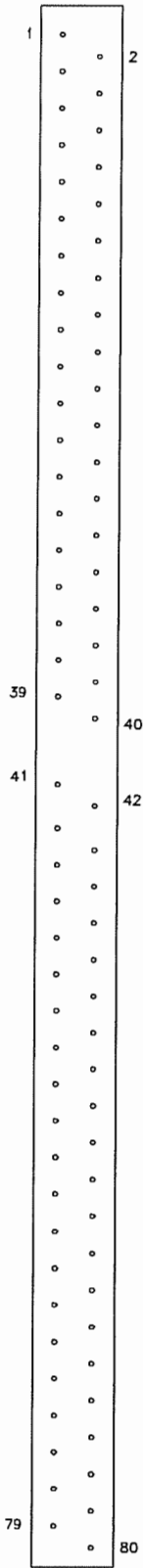
Line 17: PICTURE. Value indicates level at CSM entry.

M1020 CONNECTOR INFORMATION

M1020 VOLTAGE CHART (BOTTOM VIEW)

PIN	VOLTAGE		PIN	VOLTAGE
1	5.6V		41	0V
2	1.3V		42	0V
3	6.0V		43	8.0V
4	1.9V		44	0V
5	0V		45	5.0V
6	1.0V		46	3.1V
7	1.4V		47	3.5V
8	0V		48	5.0V
9	2.8V		49	5.0V
10	0V		50	.3V
11	2.4V		51	0V
12	0V		52	4.4V
13	0V		53	4.4V
14	0V		54	0V
15	1.7V		55	0V
16	2.4V		56	0V
17	0V		57	0V
18	0V		58	4.4V
19	0V		59	0V
20	0V		60	4.4V
21	0V		61	0V
22	0V		62	1.3V
23	1.5V		63	1.0V
24	1.4V		64	1.4V
25	1.2V		65	0V
26	1.4V		66	0V
27	0V		67	.2V
28	.05V		68	.2V
29	.09V		69	0V
30	0V		70	0V
31	0V		71	0V
32	.19V		72	0V
33	.1V		73	0V
34	0V		74	0V
35	0V		75	3.4V
36	.5V		76	3.4V
37	.09V		77	.8V
38	0V		78	3.1V
39	0V		79	5.3V
40	5.0V		80	.3V

M1020 TERMINAL GUIDE (BOTTOM VIEW)



Important Parts Information

- Parts not listed in the parts list are commonly available at your local electronics parts retailer.
- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Participating Vendors

Information on test equipment and replacement parts is listed in these pages for the following participating vendors.

- NTE Electronics, Inc. (NTE)
- Sencore, Inc.

TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR570
Generators		Capacitance Analyzer	LC102
RGB	CM2125	CRT Analyzer	CR7000
Multiburst Signal	VG91	AC Leakage Tester	PR570
Color Bar	VG91	Inductance Analyzer	LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	Field Strength Meter	SL753
Frequency Meter	SC3100	Transistor Tester	TF46
Hi-Voltage Probe	HP200	Horizontal Analyzer	HA-2500
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

PARTS LIST

Item No.	Type No.	Mfr. Part No.	NTE Part No.
D6301	BYV95C	9335 001 80133	NTE569
D6302, 03	1N5062	9330 764 50133	NTE506
D6304	BY229X-600	9340 380 20127	-
D6306 Thru			
D6309	BY229X-600	9340 380 20127	-
D6310	BYD33D	9337 234 00133	NTE552
D6313	1N4148	9330 839 90133	NTE519
D6314, 16, 17	BY229X-600	9340 380 20127	-
D6318	BYV95C	9335 001 80133	NTE569
D6320, 21	1N4148	9330 839 90133	NTE519
D6801	BY229X-200	9340 380 00127	-
D6802	BYV95C	9335 001 80133	NTE569
D6803	BY229X-200	9340 380 00127	-
D6805, 06	BYV27-200	9335 526 80133	NTE588
D6807, 08	BAS316	3198 010 10630	NTE633
D6809	BYD33J	9337 234 20133	NTE580
D6810	BYM357DX	9340 560 29127	-
D6811	BYV27-200	9335 526 80133	NTE588
D6815, 17, 18, 21	BAS316	3198 010 10630	NTE633
D6822	BYV95C	9335 001 80133	NTE569
D6823	BAS316	3198 010 10630	NTE633
D6827	BYV27-200	9335 526 80133	NTE588
D6829, 30, 31	BAS316	3198 010 10630	NTE633
D6901, 04, 08	BAS316	3198 010 10630	NTE633
D6909	1N4148	3198 010 10010	NTE519
D6910	BAT85	9336 247 60133	NTE585
D6912, 13, 14	BAS316	3198 010 10630	NTE633
D6915, 16	BYV27-600	9340 418 70133	-
D6917	BYV27-400	9340 366 90133	-
D6919	BAT254	9340 393 00115	NTE585
IC7302	MC44603AP	9322 108 36682	-
# IC7303	CQY80NG	9338 941 50682	-
IC7304, 05	TL431BCLP	9322 115 98676	NTE999
IC7803	LM393D	9339 849 10668	NTE943SM
IC7811	TDA8177	9322 066 43687	-
Q7300	BC547B	3198 020 40030	NTE123AP
Q7301	STW13NB60	9322 121 46687	-
Q7309	BC547B	3198 020 40030	NTE123AP
Q7801	BU2520AF	9340 153 80127	NTE2354
Q7802	2SK2232	9322 135 90687	-
Q7807	BSN304	9340 235 30126	-
Q7808, 09, 10	BC847B	3198 010 42030	NTE2646
Q7812	BF423	9332 593 60126	NTE288
Q7813	BC847B	3198 010 42030	NTE2646
Q7814	BC857B	3198 010 42150	NTE2409
Q7901	BF487	9337 626 60112	-
Q7902	BC847B	3198 010 42030	NTE2646
Q7903	BC327-25	3198 020 43430	NTE298
Q7904	BC847B	3198 010 42030	NTE2646
Q7905	BC857B	3198 010 42150	NTE2409
Q7906	BC847B	3198 010 42030	NTE2646
ZD6804	BZX79-C4V7	3198 010 24780	NTE5009A
ZD6812	BZX79-C68	3198 010 26890	NTE5045A
ZD6813, 14	BZX284-C10	9340 386 80115	-
ZD6816	BZX79-C68	3198 010 26890	NTE5045A
ZD6819	BZX79-C18	3198 010 21890	NTE5027A
ZD6820, 24, 25	BZX284-C10	9340 386 80115	-
ZD6826	BZX79-C18	3198 010 21890	NTE5027A

Item No.	Type No.	Mfr. Part No.	NTE Part No.
ZD6828	BZX284-C10	9340 386 80115	-
ZD6832	BZX284-C15	9340 387 20115	-
ZD6902	BZX79-C18	3198 010 21890	NTE5027A
ZD6903	BZX79-C4V7	3198 010 24780	NTE5009A
ZD6905	BZX79-C3V9	3198 010 23980	-
ZD6906	BZX79-C8V2	3198 010 28280	NTE5016A
ACS BOARD			
D6000, 01, 06	BAS316	3198 010 10630	NTE633
D6208, 09, 30	BAS316	3198 010 10630	NTE633
D6308 Thru			
D6315	BAS316	3198 010 10630	NTE633
IC7000	M24128-MN6	9322 117 46668	-
IC7002	STV2050A	9322 169 57671	-
IC7003, 04, 05	LM833D	9322 068 82668	NTE891SM
IC7006	LD1117DT33C	9322 119 88668	-
IC7007	L78M05CDT	9322 104 47668	-
IC7100	SAA5677/HL/M1	9352 692 99557	-
IC7101	TLV0831CD	9322 173 07668	-
IC7140	TL074CD	9322 015 84668	-
IC7141	74HCT4051D	9337 153 00118	-
IC7301	TPS3707-33D	9322 173 08668	-
Q7014 Thru			
Q7017	BC847B	3198 010 42030	NTE2646
Q7020	BC847B	3198 010 42030	NTE2646
Q7021	BC857B	3198 010 42150	NTE2409
Q7022, 23	BC847B	3198 010 42030	NTE2646
Q7024, 25	BC857B	3198 010 42150	NTE2409
Q7026, 27	BC847B	3198 010 42030	NTE2646
Q7028	BC857B	3198 010 42150	NTE2409
Q7036, 37	BC847B	3198 010 42030	NTE2646
Q7227	BF570	9338 144 20215	-
Q7540	BC847B	3198 010 42030	NTE2646
ZD6231	-	9340 386 10115	-
ZD6405	-	9340 386 10115	-
COMB FILTER BOARD			
D6000, 01, 02	BAV99	3198 010 10620	NTE632
D6003	TLMH3100	9322 072 71685	-
D6004, 05	S1D	9322 128 69685	NTE125
D6006	1PS76SB10	9340 453 90115	NTE585
D6007	BAS17	9335 262 30215	-
IC7019	LM809M3X-3.08	9322 163 48668	-
IC7021	LD1117DT33	9322 134 45668	-
IC7022	LD1117DT25	9322 160 50668	-
IC7023	UPD64083GF	9322 170 65671	-
Q7000	BC847B	9335 895 90215	NTE2646
Q7001	BC857B	9335 897 60215	NTE2409
Q7002	BF570	9338 144 20215	-
Q7003	BC857B	9335 897 60215	NTE2409
Q7004	BC847B	9335 895 90215	NTE2646
Q7005	BC857B	9335 897 60215	NTE2409
Q7006	BF570	9338 144 20215	-
Q7007	BC857B	9335 897 60215	NTE2409
Q7008	BC847B	9335 895 90215	NTE2646
Q7009	BC857B	9335 897 60215	NTE2409
Q7010, 11	BC847B	9335 895 90215	NTE2646
Q7012	BF550	9334 509 00215	NTE2408

Item No.	Type No.	Mfr. Part No.	NTE Part No.
Q7015	BC847B	9335 895 90215	NTE2646
Q7016	BC857B	9335 897 60215	NTE2409
Q7017, 20	BC847B	9335 895 90215	NTE2646
CRT BOARD (BLUE, GREEN, RED)			
D6200	BYD33M	9337 410 30133	NTE571
D6201	BAS21	9335 020 40215	NTE592
D6204	BAS316	3198 010 10630	NTE633
IC7201	TDA612Q/N2	9352 626 34112	-
Q7200, 02	BF570	9338 144 20215	-
DVI BOARD			
D6001	BAS316	3198 010 10630	NTE633
D6002, 03	BAV99	3198 010 10620	NTE632
D6004	BYG10J	9322 099 61685	-
IC7001	LD1117DT33	9322 134 45668	-
IC7002	SII907BCQ52	9322 183 61682	-
IC7003	M24C02-WMN6	9322 145 26668	-
IC7005	74LVC14AD	9352 607 37118	-
Q7006, 07	BSN20	9340 125 00235	NTE2646
HOP BOARD			
D6151, 52	BAS316	3198 010 10630	NTE633
D6161, 62	BAS316	3198 010 10630	NTE633
D6171, 72	BAS316	3198 010 10630	NTE633
D6181, 82	BAS316	3198 010 10630	NTE633
D6186, 87	BAS316	3198 010 10630	NTE633
D6331	BAS316	3198 010 10630	NTE633
D6495	BAS316	3198 010 10630	NTE633
D6643	BAS316	3198 010 10630	NTE633
D6963	S1D	9322 128 69685	NTE125
IC7110	BA7657F	9322 115 62668	-
IC7210	BA7657F	9322 115 62668	-
IC7328	74HC4538D	9337 149 10653	-
IC7330	74HC157D	9337 137 40653	-
IC7410, 30, 50	MC1496D	9339 656 40668	-
IC7510, 20	MC1496D	9339 656 40668	-
IC7600	TDA9332H/N2	9352 625 21557	-
IC7800	TDA8444T/N4	9350 897 50118	-
IC7900	LM393D	9339 849 10668	NTE943SM
Q7411	BF570	9338 144 20215	-
Q7412, 13, 14	BF550	9334 509 00215	NTE2408
Q7431	BF570	9338 144 20215	-
Q7432, 33, 34	BF550	9334 509 00215	NTE2408
Q7451	BF570	9338 144 20215	-
Q7452, 53, 54	BF550	9334 509 00215	NTE2408
Q7511, 21	BF570	9338 144 20215	-
Q7530, 40	BF570	9338 144 20215	-
Q7700	BF570	9338 144 20215	-
Q7701	BF550	9334 509 00215	NTE2408
Q7710	BF570	9338 144 20215	-
Q7711	BF550	9334 509 00215	NTE2408
Q7720	BF570	9338 144 20215	-
Q7721, 30	BF550	9334 509 00215	NTE2408
Q7805	BC847B	9335 895 90215	NTE2646
Q7922	BC807-25	9336 285 70215	NTE2407
ZD6923	BZM55-C6V8	9340 386 40115	-

PARTS LIST continued

Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Type No.	Mfr. Part No.	NTE Part No.
LED/KEYBOARD											
# D6002	TLDR5400	9322 110 34682	-	D6304	BAS316	3198 010 10630	NTE633	Q7701	BC847B	3198 010 42030	NTE2646
ZD6009, 11	BZX284-C6V8	9340 386 40115	-	D6312, 14, 15	BAS316	3198 010 10630	NTE633	Q7704, 05	BC847B	3198 010 42030	NTE2646
ZD6013 Thru			-	D6316, 19	BAS316	3198 010 10630	NTE633	Q7706	BC857B	3198 010 42150	NTE2409
ZD6016	BZX284-C6V8	9340 386 40115	-	D6654, 58	BAS316	3198 010 10630	NTE633	Q7707	BC847B	3198 010 42030	NTE2646
PIP BOARD				IC7001	SAA5677/HL/M1	9352 692 99557	-	Q7708	BC857B	3198 010 42150	NTE2409
D6412, 15	BAS316	3198 010 10630	NTE633	IC7005, 09	LD1117D33	9322 116 74668	-	Q7710	BC847B	3198 010 42030	NTE2646
D6803	BAS316	3198 010 10630	NTE633	IC7012	M24C32-WMN6	9322 124 74668	-	Q7800	BC847B	3198 010 42030	NTE2646
IC7301	TDA8887H/N1	9352 638 72557	-	IC7323	TDA9321H/N2	9352 625 24518	-	Q7801	BC857B	3198 010 42150	NTE2409
IC7401, 02	HEF4053BT	9333 729 60653	NTE4053BT	IC7651	MSP3451G-FH-B8-V3	9322 183 41702	-	Q7802	BC847B	3198 010 42030	NTE2646
IC7403	M62320FP	9322 127 15668	-	IC7708	SAA4990H/V2	9352 067 50557	-	Q7803	BC857B	3198 010 42150	NTE2409
IC7501	Z86130-12SSC	9322 147 01668	-	IC7709	SAA4978H/V204	9352 640 09557	-	Q7804	BC847B	3198 010 42030	NTE2646
IC7801	SAB9081H/N4	9352 639 81557	-	IC7714, 15	MSM54V12222B-25JS	9322 183 81668	-	Q7805	BC857B	3198 010 42150	NTE2409
IC7802	LD1117V33	9322 123 54687	-	IC7716	M87C257-90C1	9322 130 45668	-	Q7806, 08	BC847B	3198 010 42030	NTE2646
IC7803	TDA8601T/C1	9351 538 90518	-	Q7002	BC857B	3198 010 42150	NTE2409	Q7809	BC857B	3198 010 42150	NTE2409
IC7804	74HCIG32GW	9352 457 50115	-	Q7003, 04	BC847BW	3198 010 42310	NTE2646	Q7810	BC847B	3198 010 42030	NTE2646
Q7305, 07	BC847BW	3198 010 42310	NTE2646	Q7006, 07	PMBT2369	3198 010 43360	NTE2406	Q7811	BC857B	3198 010 42150	NTE2409
Q7331	BC857BW	3198 010 42320	-	Q7013	PDTC144EU	3198 010 44330	-	SCR6701	BT169B	9338 268 50126	NTE5404
Q7337	BC847BW	3198 010 42310	NTE2646	Q7303	BC857BW	3198 010 42320	-	ZD6012, 13	BZX284-C6V8	3198 010 56880	-
Q7368, 85, 86	BC847BW	3198 010 42310	NTE2646	Q7304	PDTC144EU	3198 010 44330	-	ZD6016, 17	BZX284-C6V8	3198 010 56880	-
Q7411, 12	BC847BW	3198 010 42310	NTE2646	Q7305, 20, 22, 75	BC847BW	3198 010 42310	NTE2646	ZD6019, 22	BZX284-C6V8	3198 010 56880	-
Q7421, 22	BC857BW	3198 010 42320	-	Q7410	BC847BW	3198 010 42310	NTE2646	ZD6025, 26, 27	BZX284-C6V8	3198 010 56880	-
Q7434	BC369	9332 592 50126	NTE294	Q7411	BC847B	3198 010 42030	NTE2646	ZD6030, 31, 32	BZX284-C6V8	3198 010 56880	-
Q7438	BC847BW	3198 010 42310	NTE2646	Q7413	BFS20	9330 921 11215	NTE2406	ZD6034	BZX284-C33	9340 388 00115	-
Q7805 Thru			-	Q7664, 65, 66	BC847BPN	9340 425 30115	-	ZD6036	-	3198 020 54780	-
Q7810	BC847BW	3198 010 42310	NTE2646	Q7668	BC857BW	3198 010 42320	-	ZD6037, 38	BZX284-C6V8	3198 010 56880	-
Q7824, 28, 32	BC847BW	3198 010 42310	NTE2646	Q7674	BC847CW	9340 217 80115	-				
Q7871, 74	BC847BW	3198 010 42310	NTE2646	Q7675, 78	BC847BS	9340 425 20115	NTE2408	Item No.	Function/Rating	Mfr. Part No.	Notes
Q7876	BC857BW	3198 010 42320	-	Q7701	BC857BW	3198 010 42320	-	# AC01	Line Cord	2422 070 98164	AC, Polarized
Q7891, 92, 93	BC847BW	3198 010 42310	NTE2646	Q7702	BC847BW	3198 010 42310	NTE2646	C2301	.0022 10% 2kV	2020 558 90559	-
Q7894	BC857BW	3198 010 42320	-	Q7704	PMBT2369	3198 010 43360	NTE2406	C2302	470pF 10% 1kV	2020 558 90471	-
Q7895	BC847BW	3198 010 42310	NTE2646	ZD6303	-	9322 150 18685	-	C2304	330pF 10% 1kV	2020 558 90554	-
ZD6801, 02	UDZ-3.9B	3198 020 53980	-	ZD6313	BZM55-C22	3198 020 52290	-	C2309	82pF 5% 50V NPO	3198 019 08290	-
POWER SUPPLY BOARD				ZD6652	BZX384-C10	3198 020 51090	-	C2312, 15	470pF 10% 1kV	2020 558 90471	-
D6000, 01	GBU4JL-7002	9322 132 55667	-	ZD6657	PDZ-2.7B	9340 548 43115	-	C2319, 23, 29	470pF 10% 1kV	2020 558 90471	-
D6203	BY229X-200	9340 380 00127	-	SSM BOARD				C2350	470pF 10% 1kV	2020 558 90471	-
D6204	PBYR10100X	9340 555 24127	-	D6001, 02, 03	S1D	9322 128 69685	NTE125	C2361	470pF 10% 1kV	2020 558 90471	-
D6207	BYD33D	9337 234 00133	NTE552	D6004	BYD33D	9337 234 00133	NTE552	C2364	470pF 10% 1kV	2020 558 90471	-
D6231	PBYR10100X	9340 555 24127	-	D6005	S1D	9322 128 69685	NTE125	# C2390	.0022 20% 50V	2020 554 90173	-
D6236	1N4148	3198 010 10010	NTE519	D6009, 10, 11	BAS316	3198 010 10630	NTE633	C2803, 05, 07	470pF 10% 1kV	2020 558 90555	-
IC7212	TL431BCLP	9322 115 98676	NTE999	D6014, 18, 20, 21	BAV99	9332 153 70215	NTE632	C2811, 14	470pF 10% 1kV	2020 558 90555	-
# IC7213	CQY80NG	9338 941 50682	-	D6023, 24, 28, 29	BAV99	9332 153 70215	NTE632	C2817	560pF 10% 2kV	2020 558 90484	-
IC7218	TOP246Y	9322 166 44687	NTE123AP	D6052, 53	BAS316	3198 010 10630	NTE633	C2818	.0082 5% 2kV	2222 375 90173	-
Q7205, 14	BC547B	3198 020 40030	-	D6702	S1D	9322 128 69685	NTE125	C2840	.0022 10% 1kV	3198 019 52220	-
Q7215	IRF9Z24N	9322 134 76687	-	IC7017	CXA2089S	9322 162 27682	-	C2847	470pF 10% 1kV	2020 558 90555	-
Q7216, 17	2SK2232	9322 135 90687	-	IC7044, 45	STK392-120	9322 123 44682	-	C2902	.0022 10% 1kV	3198 019 52220	-
Q7220, 21, 22	BC547B	3198 020 40030	NTE123AP	IC7101	L7912CV	9337 107 20682	NTE967	C2908	220pF 10% 2kV	2020 558 90478	-
ZD6240	-	3198 010 31090	-	IC7102	L7908CV	9322 069 79682	NTE965	C2918	.0022 10% 1kV	3198 019 52220	-
SIDE JACK BOARD				IC7103	L7912CV	9335 040 20682	NTE967	C2919	.001 10% 1kV	3198 019 61020	-
ZD6000 Thru			-	IC7105	L7912CV	9335 202 90682	NTE967	C2922, 24, 25	100pF 10% 1kV	3198 019 51010	-
ZD6013	BZM55-C6V8	3198 020 56880	-	IC7106	LM317T	9337 220 80682	NTE956	# CRTB	CRT, Blue	9322 179 60682	P16LFM00BMB(EU)
SSB BOARD				IC7403	TDA1308T/N1	9350 721 10115	-	# CRTG	CRT, Green	9322 179 59682	P16LFM00HHA(LU)
D6003	BAS316	3198 010 10630	NTE633	IC7700	TDA7490	9322 147 50667	-	# CRTR	CRT, Red	9322 179 58682	P16LFM00RFA(LU)
				Q7002, 03	BC847B	3198 010 42030	NTE2646	# F1300	Fuse	2422 093 00035	5Amp, 250V
				Q7005, 07	BC817-25	3198 010 43230	NTE2406	# F1801	Fuse	2422 086 10783	2Amp, 250V
				Q7016	BC847B	3198 010 42030	NTE2646	# F1804, 05	Fuse	2422 086 10779	1Amp, 250V
				Q7208	BC847B	3198 010 42030	NTE2646	# FB1	Focus Block	2422 549 45198	15kV
				Q7415	BC847B	3198 010 42030	NTE2646	FB5301 Thru			
								FB5306	Ferrite Bead	3198 018 90020	-

PARTS LIST continued

[illegible]

PARTS LIST continued

Item No.	Function/Rating	Mfr. Part No.	Notes	Item No.	Function/Rating	Mfr. Part No.	Notes	Item No.	Function/Rating	Mfr. Part No.	Notes
R3365	1000 1% 1/10W	2120 108 91451	-	SSB BOARD				J1021	Jack	2422 026 05293	Assembly
# R3462	2.2 5% 1/3W	2306 204 03228		C2652	47pF 5% 50V NPO	3198 016 34790	-	J1024	Jack	2422 026 05064	Assembly
# R3862, 63	1 5% 1/3W	2306 204 03108		C2667, 68	3.3pF 8% 50V NPO	3198 016 33380	-	J1025	Jack	2422 026 04926	SVHS
SF1352	Filter	2422 549 43074	SAW	# F1003	Fuse	2422 086 11092	500mAmp, 50V	J1026	Jack	2422 026 04926	SVHS
TU7201	Tuner	2422 542 90077	PIP	FB3900 Thru				J1027	Jack	2422 026 05294	Assembly
X1327	Crystal	2422 543 00488	12MHz	FB3911	Ferrite Bead	3198 018 90040	-	J1029	Jack	2422 026 04425	Sub Woofer
X1334	Trap	2422 549 44043	4.5MHz	FB5407, 09	Ferrite Bead	2422 535 95427	-	L5000 Thru			
X1501	Crystal	2422 543 01069	32.768kHz	FB5651, 52, 53	Ferrite Bead	2422 549 43769	-	L5004	10µH	2422 535 95363	-
	PC Board	3139 127 28331	PIP	FB5654	Ferrite Bead	3198 018 90060	-	L5007	5.6µH	3198 018 15680	-
POWER SUPPLY BOARD				FB5664, 65	Ferrite Bead	3198 018 90060	-	L5009	15µH	3198 018 31590	-
# C2000	.68 20% 275V	2222 336 29149	-	FB5701	Ferrite Bead	3198 018 90080	-	L5011	10µH	2422 535 95363	-
# C2002, 03	.0022 20% 50V	2020 554 90173	-	FB5702	Ferrite Bead	2422 535 95427	-	L5701, 02	68µH	2422 536 00385	-
C2006 Thru				FB5703	Ferrite Bead	3198 018 90060	-	L5713, 14	10µH	2422 535 95363	-
C2009	.001 10% 1kV	2020 558 90557	-	FB5705	Ferrite Bead	2422 535 95427	-	R3033, 34	22K 1% 1/8W	2322 734 62203	-
# C2011, 12	470pF 10% 50V	2020 554 90169	-	FB5707	Ferrite Bead	3198 018 90040	-	R3138	2700 1% 1/8W	2322 734 62702	-
# C2204	470pF 10% 50V	2020 554 90169	-	FB5711, 13	Ferrite Bead	3198 018 90040	-	R3139	430 1% 1/8W	2322 734 64301	-
C2215, 16, 17	470pF 10% 1kV	3198 019 64710	-	FB5720	Ferrite Bead	3198 018 90040	-	R3161 Thru			
C2218	330pF 10% 1kV	2020 558 90519	-	FB5798, 99	Ferrite Bead	3198 018 90060	-	R3166	100 5% 3W	2120 105 93449	-
C2292	.001 10% 1kV	2020 558 90557	-	FB5900 Thru				SF1200	Filter	2422 549 43302	4.5MHz
C2294	330pF 10% 1kV	2020 558 90519	-	FB5904	Ferrite Bead	3198 018 90060	-	TU1106	Tuner	2422 542 90113	-
# C2295	470pF 10% 50V	2020 554 90169	-	L5301	6.8µH	3198 018 36880	-		PC Board	3135 037 10841	SSM
# F1000	Fuse	2422 093 00035	5Amp, 250V	L5401	-	3198 018 33970	-	# For SAFETY use only equivalent replacement part.			
FB5204	Ferrite Bead	3198 018 90020	-	L5406	15µH	3198 018 31590	-	(1) Includes convergence yoke.			
FB5237	Ferrite Bead	3198 018 90020	-	L5408	Modulator Coil	2422 549 44875	-	(2) Used in 55" models.			
FB5243	Ferrite Bead	3198 018 90020	-	L5410	1µH	3198 018 51080	-	(3) Used in 60" models.			
L5234	10µH	2422 535 95363	-	L5656	6.8µH	3198 018 36880	-	(4) If deflection yokes are gray - Red and Blue are Part No. 2422 549 45209 and Green is			
L5238	10µH	2422 535 95363	-	L5706	5.6µH	3198 018 35680	-	Part No. 2422 549 45208. If deflection yokes are black - Red, Blue, and Green are			
L5240, 42, 44	10µH	2422 535 95363	-	L5718	-	3198 018 33370	-	Part No. 2422 549 45009 and C2850 .51 5% 250V capacitor is used.			
L5246, 47	10µH	2422 535 95363	-	R3018	24K 1% 1/16W	2120 108 93909	-	(5) Used in models 55PP9502/17, 55PP950201, 60PP9502/17, 60PP9502/99 and 60PP50201.			
# LC5000	Line Choke	2422 549 44591	-	# R3070, 71	1.5 5% 1/8W	2322 750 61508	-				
LC5201	Line Choke	2422 549 44101	-	# R3300, 04	3.9 5% 1/8W	2322 750 63908	-				
# R3000, 01, 02	4.7M 5% 1/2W	2322 242 13475	-	# R3329	6.8 5% 1/8W	2322 750 66808	-				
# R3004	4.7M 5% 1/2W	2322 242 13475	-	# R3400	4.7 5% 1/8W	2322 750 64708	-				
R3009, 10	1 10% 5W	2322 251 41108	-	# R3416	6.8 5% 1/8W	2322 750 66808	-				
R3013, 14	1 10% 5W	2322 251 41108	-	# R3644	4.7 5% 1/8W	2322 750 64708	-				
R3208	220 5% 5W	2322 251 41221	-	R3790 Thru							
R3224	6.8 1% 3/5W	2322 156 26808	-	R3795	100 X 4 Network	3198 031 11010	-				
R3239	10K 1% 3/5W	2322 156 21003	-	SF1407	Trap	2422 549 44043	4.5MHz				
R3247	10.7K 1% 3/5W	2322 156 21073	-	SF1408	Filter	2422 549 44377	SAW				
SG2004	Surge Protector	2422 549 42349	-	SF1410	Filter	2422 549 44534	4.5MHz				
# T5202	Power	2422 531 02496	-	X1001	Resonator	2422 543 89018	12MHz				
# VR3011	Varistor	2322 595 90021	-	X1318	Crystal	2422 543 00861	3.58MHz				
	PC Board	3135 037 10591	Power Supply	X1651	Crystal	2422 543 89019	18.432MHz				
				X1701	Resonator	2422 543 89018	12MHz				
REAR SWITCH PANEL					PC Board	3104 328 15387	SSB				
S1002	Switch	2422 127 00485	Amp, Internal/External	SSM BOARD							
	PC Board (5)	3135 017 05541	Rear Switch Panel	C2105, 07, 09	150pF 5% 50V NPO	2020 552 94291	-				
SIDE JACK BOARD				C2111, 13, 15	150pF 5% 50V NPO	2020 552 94291	-				
J1001	Jack	2422 026 04756	Assembly	# F1700, 01	Fuse	2422 086 10783	2Amp, 250V				
J1002	Jack	2422 026 04926	SVHS	FB5005, 06, 08	Ferrite Bead	3198 018 90080	-				
J1007	Jack	2422 026 04747	Headphone	FB5709, 10	Ferrite Bead	3198 018 90020	-				
	PC Board	3135 037 10581	Side Jack	FB5711, 12	Ferrite Bead	3198 018 90060	-				
				FB5715, 16	Ferrite Bead	3198 018 90020	-				

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MODEL 55PP9502/84 (CHASSIS DTV315)